UNITED STATES BANKRUPTCY COURT
FOR THE WESTERN DISTRICT OF NORTH CAROLINA
CHARLOTTE DIVISION

IN RE:	)	
	)	
GARLOCK SEALING TECHNOLOGIES	)	
LLC, et al,	)	No. 10-BK-31607
	)	
Debtors.	)	VOLUME XVI
	)	FULL DAY

TRANSCRIPT OF ESTIMATION TRIAL
BEFORE THE HONORABLE GEORGE R. HODGES
UNITED STATES BANKRUPTCY JUDGE
AUGUST 12, 2013

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E X H I B I T S

DEBTORS' EXHIBITS:

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ACC EXHIBITS:

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P R O C E E D I N G S

AUGUST 12, 2013, COURT CALLED TO ORDER 9:00 A.M.:

THE COURT: Have a seat and we'll get going.

Mr. Guy?

MR. GUY: Yes, good morning, Your Honor. We will be submitting slightly revised exhibits for Dr. Rabinovitz.

THE COURT: Okay.

MR. GUY: Mr. Magee will be pleased to know it makes the number a little bit smaller.

We also, on behalf of the FCR and myself, I would like to thank the Court and everybody on the courtroom staff for the last three weeks, that we appreciate all the courtesies and patience.

THE COURT: Thank you all. We've appreciated the entertainment and the stimulation.

Okay. So we'll go, I think, back with Dr. Rabinovitz.

I did notice it was about time to quit, because I'm almost out of candy.

FRANCINE F. RABINOVITZ,

Being previously sworn, was examined and testified as follows:

CROSS-EXAMINATION

BY MR. CASSADA:

Q. Good morning, Dr. Rabinovitz.

A. Good morning.

Q. Dr. Rabinovitz, you're not an economist, are you?
A. No, sir.
Q. Nor an econometrician?
A. No.
Q. Nor a statistician?
A. Nope.
Q. I believe you had testified your CV indicates that you've got a Bachelor of Arts degree in government?
A. Correct.
Q. And a Ph.D. in political science?
A. Yes.
Q. But you regard the estimation work you do as science?
A. Yes, I do. The training that I received actually at Cornell, but to a much, much greater extent at MIT, is something called policy analysis now, and there are actual programs, including the one I retired from at the University of Southern California, which specializes in policy analysis, which is the application of a variety of social science data collection and analysis techniques like statistics, like survey research, like finite mathematics and others to important public problems. And therefore my training sends me to major problems to try and deploy those techniques in order to reach conclusions about policies that should be adopted around them.
Q. You regard the predictive value of your work as an

important --
A. Yes, sir.
Q. -- test for its reliability?
A. Yes.
Q. And the core method you use is the same as the method that Dr. Peterson uses, correct?
A. I think that's fair.
Q. Dr. Peterson testified he's applying the behavioral science of law something like that, and you're describing your science as policy analysis?
A. Yes.
Q. In the report that you rendered in this case, you've added defense costs to your estimate of the liability.
A. Well, I included defense costs in the estimate, yes.
Q. To be clear, you included projected out-of-pocket lawyer's fees and expert fees that Garlock might be expected to incur in the court system?
A. We simply took Garlock's past expenditures for defense, and projected them as a percentage, and took that forward.
Q. Okay.
A. That's material I believe Garlock provided.
Q. And you have even identified in your report, estimating future defense costs as one of the steps of your methodology?
A. Yes.
Q. Now I've looked at the other reports that you've given in

previous bankruptcy cases, and I don't see that as a step in any of your previous work, at least in estimating liability in bankruptcy cases.

A. Well, two things: One, I believe that when you provided me material for my ASARCO report, that it was actually included there. But we have -- in cases where clearly there is insolvency, not estimated the defense costs because it's pointless. The indemnity costs are so overwhelming to the financial situation of the company that there's no point in it.

Moreover, here, Dr. Bates placed special emphasis on the role of defense costs, and so that drew us -- given that his explanation is -- involves their centrality to the resolution of cases. So for all those reasons we did so here.

And as I think you're aware, we also do so in every SEC filing that we prepare for solvent defendants.

Q. Well, I did not see that you had ever done that in a bankruptcy case before. And I looked at the ASARCO estimation, and I did see in the rebuttal report there was some analysis of defense costs. But in the actual estimate of the liability, you did not include defense costs.

A. That may be so.

Q. Okay. And as far as I can tell, you've never done that in any bankruptcy case, correct?

A. Well as I said, one of the reasons was to explore further

what Dr. Bates had emphasized, i.e. that defense costs were an important part of the decision making.

Q. And you were concerned that Garlock would not be insolvent unless you included those costs?

A. Well, I don't think there's been any testimony on -- on solvency. So I didn't know.

Q. Now, I did find buried in your report, that you couldn't discern from your numbers the actual value that you attached to the actual liability for claims. I've got Slide 2 up here. And if we look back in the appendices to your report and the cash flow numbers, we can deduct your projection of Garlock's defense costs from your numbers and see that the liability for the claims that you've estimated at the low $893 million to a high of $949 million?

A. That's correct.

Q. So that's the number, if the court's interested in what your estimate is for the liability for the actual claims, those are the numbers, correct?

A. Yes. It is not hard to deduct the defense costs.

Q. Okay. You do understand that Garlock's lawyers and experts, they don't have claims in this bankruptcy case for amounts they would have earned if Garlock had not filed for bankruptcy, correct?

A. Could you repeat that?

Q. You understand that Garlock's lawyers and experts, they

don't have claims in this bankruptcy case for fees they would have earned had Garlock not filed, do they?

A. Yes, I understand that.

Q. And you understand that claimants aren't entitled to make claims for those amounts either, correct?

A. Yes.

Q. Okay. I believe you had mentioned -- I did not hear you mention it just now, but you mentioned that perhaps the defense costs that Garlock incurred, would be a proxy for administrative costs for the trust?

A. Yes.

Q. But you haven't estimated how much money a trust would require for administrative costs to satisfy current and future mesothelioma claims, correct?

A. Well, until we have a accepted trust distribution plan, it is not possible to estimate the administrative and other costs of implementing that plan.

By saying it's a proxy, what I mean is, I want to emphasize that at the stage that that becomes possible for whatever trust distribution process is adopted, it is necessary to provide an estimate of those fees, particularly as the expert for the future's representative, because we want those set aside in a fund for administration, rather than coming out of the overall corpus where it would disadvantage the future claimants.

Q. But -- but you've not expressed any opinion in your reports in this case about what administrative costs of a Garlock trust would actually be, have you?
A. I have not. As I said, without an adopted trust distribution process, it's not possible to make such an estimate. Once there is one, I have participated in numerous efforts, including the latest in the Quigley case which has just gone to confirmation, to prepare such a budget and to ask that those funds be set aside specifically for administration.
Q. But you acknowledge, don't you, that the administrative costs of a trust are a small fraction of what the defense costs were in the tort system, correct?
A. I hope so.
Q. Well, that's been your experience, hasn't it?
A. A small fraction may be too extreme, but yes, they're less.
Q. Okay. And you have knowledge actually concerning the administrative costs of trust because you've estimated those amounts before and I believe you've testified that you're the actual claims administrator for future reps in bankruptcy cases?
A. Not claims administrator. I have been -- we have --
Q. Well, the claim's estimator, excuse me.
A. The claim's estimator?
Q. Yes.

A. Yes.
Q. But you do know those costs don't come anywhere near approaching the amount of defense costs that defendants incur in the tort system?
A. As I said, I sincerely hope so.
Q. Well, I'm not asking you what you hope. I'm asking your experience, your knowledge about that. And you know for a fact that those costs aren't anywhere near the amounts spent in the tort system?
A. They are not, but it does depend somewhat on the trust distribution process. For example, if one were adopting a trust distribution process which emphasized the need or required that every case go to verdict, you could find yourself in a situation where the costs were very high. Under the kind of mostly or almost entire settlement system in what I suspected you would call the standard trust distribution process being used today, that's not the case. That's my hesitation. It does depend on what the provisions in the trust distribution process actually are. And if they were to emphasize litigation, those expenses could rise substantially.

We have, as an example, going all the way back to the original Manville trust, which itself went under and then was reorganized by Judge Weinstein in a class action, an early experience with the cost of forcing cases on both sides into the court rather than settling them and it was, I think, that

experience which caused the Manville trust after it was first formed to go under again.

Q. But we're better off, aren't we, waiting to see what the trust looks like in the trust distribution procedures before we estimate trust administrative costs?

A. Yes, I think I've said that.

Q. Okay. Finally, you mentioned that you included an actual out-of-pocket defense costs, because Dr. Bates had focused on the role of avoidable defense costs played in determining the level of Garlock's settlement payments?

A. Well, he -- he emphasizes the role of defense costs in the thinking of the company, and therefore made me rethink how I wanted to treat them, once again.

Q. So you do recognize, though, that the actual out-of-pocket defense costs that you included in the defense costs, are different from the avoidable defense costs that Dr. Bates has emphasized?

A. Yes, as I understand what he is saying, that is his definition.

Q. So are you saying that if the debtor hadn't made that argument, then you wouldn't have included the defense costs in your estimate?

A. No, I didn't say that. I said that there are several reasons, one of which is the emphasis that he placed on the role of defense costs.

Q. Okay. Let me ask you about your -- some more about your methodology.

Now you've described your methodology really as being quite simple, correct?

A. Well, you described it as being simple, it's actually pretty complex. But I tried to reduce it to a series of definable steps so that it is and was clear to the Court, to other parties, and to anybody thinking about how to do this analysis, or how this analysis was done.

Q. Well, we talked in Los Angeles a month ago about your methodology. And I understand the only judgment call you really make when you're applying your methodology to a particular debtor, is the decision on what calibration period to choose, right?

A. Well, I think what you asked me was -- let's see what did you ask me.

Q. I'm sorry?

A. The screen just popped up in front of me. I was looking at you and so I said, let's see what you did ask me.

Yes. This is -- you said to me, the choice of calibration period hinges on your judgment about what period of time in Garlock's history.

And then you say, so that's probably the biggest -- maybe it's not the only judgment call or call that you're called upon to make.

And I think I said it was, and this confirms it, that it was the biggest, or you said it was the biggest.

Q. Right. But you agree with that, don't you?

A. That it is the biggest decision? Yes.

Q. Yes. In fact, I've looked at your report and I've considered your testimony, and I can't really find another judgment call in your methodology. It seems you've got your calibration period, and then your claim rates, your claim -- your payment rates, and your settlement values all flow from the data within your calibration period?

A. You're absolutely right. We are --

MR. GUY: Your Honor, Dr. Rabinovitz --

THE WITNESS: Sorry.

MR. GUY: I have to object because the following sentence says, well let's talk about it. And then it says, another important call, which we usually don't make in the SEC-related world is the horizon projecting into the future.

Mr. Cassada, I'm sure inadvertently, is taking snippets of the deposition transcript and not showing the --

THE COURT: All right.

MR. GUY: -- witness the full transcript --

MR. CASSADA: Well, Your Honor --

MR. GUY: -- which we have, Your Honor, and we're happy to submit it.

MR. CASSADA: I think Mr. Guy knows that the horizon

is not a consideration in the bankruptcy case as Dr. Rabinovitz --

THE COURT: Go ahead and ask the next question.

MR. CASSADA: Okay.

Q. So is there any other judgment call that you make in estimating liability in a bankruptcy case?

A. I am happy to say that we are data driven.

Q. Okay.

A. We are not making large numbers of judgments outside what the data tell us the actual situation is. So I think it's helpful not to make a variety of judgment calls to the extent that you can avoid it, and simply allow the data to dictate what the conclusion should be.

Q. Okay. So the choice of the calibration period -- I've been a little bit confused about the basis for that choice -- it's supposed to provide a snapshot of a period during which Garlock's claims history or experience will look like -- what you believe the future will look like?

A. Yes.

Q. So I thought I also heard you say you choose the calibration period closest to bankruptcy period because judges told you that's what you should choose.

A. Yes, but you can see that there is a little bit of interpretation there when you look at the claim rates, next, were we choosing a higher claim rate with less data we could

drive the claim rate up. So we're choosing not to take the three year, or the four year, which would be higher in the interests of maintaining more data in the five year.

But yes, we believe that in the Eagle-Picher case the judge gave some helpful instructions about what he anticipated -- anticipated estimators in his case, and future estimators should be required to do. And he emphasized the recency -- I'm not even going to try the propinquity -- I knew I shouldn't -- the recency business as one of those criteria.

Q. So you follow the general rule that the most recent history is the history you should use, and the judgment call as to how far to go prior to the bankruptcy case to pick the actual start date of your calibration period?

A. Yes.

Q. And you're aware that the amount Garlock has paid to settle mesothelioma claims has varied over time, correct?

A. Yes.

Q. And this is a slide, Slide 4 that the Court and I believe you probably have seen before too, which depicts the average settlement value of a mesothelioma claim in the years preceding the bankruptcy case.

A. Yes. This is without the zeros though. Remember that we are more interested -- these are what we call positive pays, that is, these are people who received compensation for their claims.

A more interesting number has to do with the number of positive pays combined with the number of zeros, because there's a very large -- I believe the number is 46 percent -- who do not receive any compensation but have their claims dismissed for zero. So these are the positive pays.

Q. Okay. Well we'll talk about the resolution amounts including the zeros a little bit later. But as I understood your testimony last Friday and when we talked in Los Angeles, the only time period you considered was the time period 2002 to 2010, correct?

A. Well, we looked at the 1990s, but did not use them.

Q. Okay. But as I understand it, you looked at the 1990s but you didn't undertake any analysis to determine why Garlock's settlements increased from the 1990s to the 2000s, correct?

A. Well, one of the things that was apparent in the data, is that there are probably lots of group settlements in those earlier periods. Because you get numbers which are pretty even, suggesting that a total, maybe "X" the driver case, was settled in group. And then either the plaintiffs' lawyers were permitted to distribute those funds as they saw fit, or at least there was little follow up as to what actually had been paid to each individual after the group had been valued as a whole.

So, we did discover that that style, I would call it, of

settling claims was less characteristic of the later period. But we did not use the 1990s as a basis for calibrating the future.

Q. Let me understand -- let me make sure I understand it. Are you saying that you looked at the 1990s and determined that you made some determination about why the settlement values increased going into the 2000s?

A. No, I didn't say that. What I'm saying is, in the data for the 1990s, it looks as if fairly even amounts were paid to each individual. Why would that have happened? There are really two ways to think about it.

One is, there's a driver case followed by a group settlement and the plaintiff's lawyer is allowed to distribute the funds for that group as he sees fit.

Or, once the group is settled, there isn't the kind of detailed follow-up in recording the amounts that occurs later.

It's just a rather different period from the viewpoint even of the company's handling of those claims. So we -- quite apart from the *Eagle-Picher* precedent, wanted to move forward closer to what will be the future.

Q. Did you -- are you testifying that you have done this analysis about group settlements as a way of understanding why the settlements increased from the 1990s to the 2000s?

A. We simply -- I don't have a theory about why they increased. They -- we simply looked at them and said, this is

what it looks like, let's go forward.
Q. Okay. So you didn't -- you didn't try to understand why they increased. You just looked at the later period?
A. We looked at the data. We're data driven. We're not introducing large theoretical concepts to the extent that we can avoid them.

Plus, we have precedent we believe, or instruction from the Eagle-Picher Corp. early on in this litigation that suggests that recency is important.

Plus we know since we're doing work for all kinds of clients, that there's been a lot of changes between the '90s and indeed the 2000s to the 2005 period, which changed the conditions for the future, compared to the far-away past.
Q. I guess that's what I'm trying to get at. That's whether you analyzed those changes to determine what the forces were that drove Garlock's settlement values. If I understand your testimony, you have no understanding or opinion about what actually caused that increase?

MR. GUY: Objection; asked and answered three times, Your Honor.

THE COURT: Go ahead and do it one more time.

BY MR. CASSADA:
Q. Is that correct?
A. You seem to be implying that we didn't look. We did look. Did we develop a full-blown theory about what happened

in the '90s, what happened in the 2000s before 2005, no, we did not. But we could see in the data differences in the company's behavior in the period. And we are told in Eagle-Picher, recency is better. And we also believe that if we're trying to predict the future, the likelihood that the system will revert to the conditions in the 1990s may be small.

Q. So in previous work though, you've recognized that the big wave of bankruptcies that began in 2000 created enormous pressure on companies that were not bankrupt "maintain the cash flow of law firms to pay claimants"?

A. Can you do that again?

Q. Yeah. Slide 5 here shows your testimony in 2003 in the Western Asbestos case. In there you talked about what caused the increase in claims values for surviving defendants from the 1990s to the 2000s and you recognized there, and I'm quoting from your testimony, that it's been our view in recent years that until the big wave of bankruptcies that's now caught up in the courts all over the country -- bankruptcy courts all over the country -- enter the system again, there will be enormous pressure on companies which are not bankrupt in some sense to "maintain the cash flow of law firms and pay claimants".

Q. Do you recall that was your view before this bankruptcy case, correct?

A. I'm reading. Give me just a second to read this.
Q. Okay.
A. And is there anything that follows it? Can we see the next?
Q. I'm sure there is, if you're interested in it.
MR. GUY: Same objection, Your Honor.
THE WITNESS: Let's just make sure that I'm seeing the whole thing. Because I've been -- I didn't ask that before.
MR. GUY: Your Honor, this is a transcript from 10 years ago, which we haven't seen. Dr. Rabinovitz probably hasn't seen in a long time. Again, snippettes in isolation.
THE COURT: Okay. She can answer the questions if she can.
BY MR. CASSADA:
Q. I'm happy to show it, but I guess --
A. Well, it's a 2003 -- it's 2003 testimony in Western Mac. I just wanted to be sure I was looking at the whole thing.
Q. This doesn't refresh your recollection regarding --
A. Of what happened in Western Mac, no.
Q. Well, let me finish the question. This doesn't refresh your recollection regarding what the view was at one time about why settlement values for the surviving defendants increased after the bankruptcy wave of 2000?
A. Yes. This is not probably as much about the 1990s as it

is about the 2000 to 2005 period. It's hard to know sitting here today.

Q. So your testimony it appears right here -- it appears right after that you said "so historically --

A. Where are you?

MR. GUY: May I have a copy of the transcript, please?

MR. CASSADA: You can read it right here.

MR. GUY: May I have a copy of the whole transcript?

MR. CASSADA: "So historically we don't know how long it will take --"

THE COURT: We'll let him ask about it. Go ahead.

BY MR. CASSADA:

Q. "We don't know how long it will take" -- this is you testifying -- "to resolve the existing bankruptcies. Historically it has taken an average of six years to resolve a bankruptcy, in my view has been that because of the consolidation --"

A. Can you give me the line? I can't read it off the screen, so I'm going to read it here. If you could give me a line, that would help me.

Q. Sure. (Handing paper writing to the witness.)

A. I'm still going to need the line. I can read it off this screen if you give me the line.

Q. But it's --

A. What I meant was the big screen.
Q. Oh.
A. I can read it here if you give me the line.
Q. Understand. Okay.
A. Thank you, though.
Q. Sure. It's page 1292. The actual testimony we're looking at begins on line 14.
A. Okay.
MR. GUY: Your Honor, we have no objection to this being admitted into evidence if it will facilitate this. 2003 --
THE COURT: Go ahead and ask him --
THE WITNESS: I tried to move it, I didn't mean to do that. I tried to move it to the next page.
MR. GUY: You wouldn't be the first one.
THE COURT: That's been getting everybody.
THE WITNESS: I was trying to see the continuation of that sentence on what must be 1293. I was trying to move it, but I made -- apparently made a red line -- "that the". It's over there. That sentence is incomplete. I was just going to read the next sentence.
BY MR. CASSADA:
Q. Which sentence were you going to read?
A. The sentence that says, "historically".
Q. Right. Okay. And it continues right below that.

A. Oh, it continues. No. Oh, okay. Continues -- that 1293's below it?
Q. That's correct?
A. Okay. This was talking about an increased model trending -- claiming up. As you see at the end of the paragraph, what I'm saying is that there's going to be a period in which these asbestos bankruptcies are being adjudicated in the courts and it might be six years, but because the Delaware bankruptcy court has got all these cases and is trying to be efficient about it, you might reduce it. But during that period, whenever it turns out to be, we need to expect that compensation will be pressed to the -- in this period, called peripheral defendants, to increase for a period of time and then flatten out into the future.
Q. So you were recognizing, weren't you, in the Western case, that the settlement pressure on Western had increased because these bankruptcies would flatten in the future when those bankruptcies were resolved?
A. Well, that was -- that was the model we were using to forecast Western MacArthur, yes.
Q. Okay. That -- okay. So that was your view then.
And that's what you didn't do in this case. You didn't analyze whether those values had increased as a result of those -- that wave of bankruptcies that you described?
A. Well we followed the data and we did not use an increase

model in estimating Garlock liabilities. Because we've moved forward and -- in the period from about 2000 to generally 2005, those bankruptcies have begun to pay claims so we did not use an increase model here.

You talked at length with Dr. Peterson about an increased model in his analysis. We did not use an increased model here. Because now these big trusts are -- not all of them, some of them are still coming online, Quigley, for example, but now many of the trusts are functioning and paying claimants.

Q. That's what I want to ask you about, because you did recognize in previous work that the availability of the $30 billion in trust, and the money that would be flowing -- I think you said that it would place "considerable downward pressure on the defendant's indemnity values in the future", correct?

A. Well, I don't know whether that's exactly what I said. But you are correct that in this period looking at Western MacArthur, I said there's going to be in the 2000 -- what turned out to be the 2000 to 2005 period, there's going to be an increase because of the complete absence of a lot of large companies from the payment stream and in bankruptcy. And then I did expect that when they began to operate these trusts, the pressure would decrease.

Now, that is not what has happened. If you look at

solvent defendants -- the solvent defendants I look at every quarter and every year, it is not decreasing.

So that was an incorrect expectation, at least with regard to the time period from 2005 to today. And I think we talked about the fact that the casualty actuaries followed this very closely. They have not seen a decrease in pressure. And the big property casualty insurers are indeed increasing their reserves. Although as I said, they may have under-reserved in past years, so there's kind of a mixed motivation there. It just didn't happen.

Q. Okay. We'll get to that. In fact, I'm going to show you the Tillinghast half-slide presentation that you reviewed in that regard. They didn't connect the increased reserves to the situation with the trust, did they? At least you testified last Friday that you couldn't really make that connection.

A. Well, they are -- their -- their data is drawn largely from the property casualty insurers.

Q. And you did --

A. So they -- they are simply looking at what appears to be happening and not why. They're simply reporting on how the property casualty industry is behaving.

Q. They did look at the why, because they talked during that presentation about the national issue of importance that the trusts weren't transparent, and that the defendants in the

tort system were fighting to gain trust transparency. You do remember that, don't you?

A. I do remember it. You are making that a more value-laden discussion. You'll have to show me the exact document, but I think it's more neutral than that.

Q. You do recall that they connected the two?

A. Well, they talked about the fact that many companies were pushing for what is here called -- has come to be called transparency.

I think as somebody who has tried to obtain data on both sides of the fence, that is from companies in the FAIR Act effort, nobody is transparent. No one wants to give up their individual data and documents.

But I do know that they talked about what was happening, but in a less value-laden way than I think you are expressing it.

Q. Let's just be clear. In 2009 -- well, in 2009 you submitted a proffer or a declaration attaching estimation reports in the ASARCO case that you had submitted in previous years I believe in 2007?

A. Say that again?

Q. Let me back up from there.

A. Okay.

Q. You were -- and I think we saw this on your CV, you were a claims estimator in the ASARCO case?

A. I was, for ASARCO.
Q. Okay, for ASARCO. So in that case unlike this case, you were the claim's estimator for the debtor?
A. Correct.
Q. Okay. And in that case when you were rebutting Dr. Peterson's report, and Dr. Peterson had projected that ASARCO's values would go up because of the bankruptcy wave and you disagreed with that, but then you stated in the report that "even assuming that the LAS argument that plaintiffs' firms had to make up their losses from the loss of eight major defendants, and CCR payments is true, the recent availability of $30 billion in new asbestos trust assets would place considerable downward pressure on indemnity values". Do you recall that?
A. I do.
Q. Okay. And you went on to say, "setoff or settlement credits were required by law in three of the states where the entities were sued in the largest numbers, Texas, Ohio and Pennsylvania, and may also be available in a fourth, Mississippi." Do you recall that?
A. I do.
Q. In fact in that case, you asked, didn't you, the debtor's law firm Baker Botts to prepare a legal memorandum for you, explaining what the rules were for setoff and allocation in key states, correct?

A. Yes, sir.
Q. And you relied on that memo in rendering your opinion?
A. I did.
Q. So you were taking a merits-based approach. You were saying that since the law would require this, then you would expect considerable downward pressure on indemnity values, right?
A. Yes. And I said to you in deposition on this issue, I was wrong, and I'm the person who's been wrong about the aggregate situation a couple of times before.

Remember that I was the estimator for the FAIR Act, which I sincerely believed would pass, and would be a good thing for everybody. And it is our firm that produced the theory and the initial bone structure of the asbestos claim facility before that was adopted in 1982, closed down in 1985.

So I did think that when these trusts opened, there would be downward pressure on indemnity values for the remaining solvent defendants. But as the Tillinghast and others -- or Towers Watson and other information suggests, it isn't happening. I've been wrong before.

Q. Yes. But going back to your support of the FAIR Act. You said you testified in support of that?
A. I did.
Q. And you thought it would be a good thing?
A. I did.

Q. You recall that under the FAIR Act there's going to be a trust set up and all of the defendants were going to contribute to the trust?
A. The defendants and the insurers.
Q. So the people who had mesothelioma claims would assert their claims against the trust and not against defendants?
A. All the defendants and all the insurance would have been drawn together. First the insurance, and then in a formulaic way, actually not unrelated to what was tried in the asbestos claim facility, companies would continue to contribute. It's not that the burden on companies would go away. Insurers were being asked and it wasn't a popular request, to put all of their reserves into the first couple of years of the operation of the FAIR Act Trust. And then after that, the companies were going to contribute on a formulaic basis.

And indeed the issue which caused the defeat was some of the Senators were dubious that you could go and continue that pattern. They were afraid that eventually there would be resources required from the federal government and they sure didn't want that to happen.

Q. You recall that under the FAIR Act, mesothelioma claimants would be paid by the trust in lieu of payments from the defendants and their insurers?
A. Yes. There would no longer be payments from the defendants and the insurers. That was the premise.

But the insurers were being asked to put all their reserves in up front. The companies, on a formulaic basis, were going to contribute into the future as long as necessary.

And what Senator Nichol, I think, was particularly concerned about was, that if you wanted to increase that amount -- if what the companies by formula were contributing wasn't enough, there would be recourse to the budget of the federal government which was very unpopular.

Q. Right. Do you recall that the mesothelioma claimants under the FAIR Act would receive approximately $1.1 million for their mesothelioma claims?

A. I do not.

Q. Okay. But you in any event at the time you were knowledgeable and you thought the FAIR Act was fair?

A. Yes. I have advocated for, as in the asbestos claims facility and the FAIR Act, what I might call comprehensive solutions where all the claimants were treated together. And it has never happened.

Q. But in any event, back in 2009 when you were representing or serving as the claim's estimator for ASARCO, it was your belief that ASARCO's settlement values would be subject to considerable downward pressure because of the emerging bankruptcy trust, correct?

MR. GUY: Objection; asked and answered, Your Honor.

THE COURT: Sustained.

BY MR. CASSADA:
Q. And this graph here showing actual aggregate bankruptcy trust payments by year, this is why you believed that, right? Because beginning in 2007, this amount of money from trust increased greatly.
A. Yes. And this is one of the things which makes the current -- you can see, this is one of the things which suggests the sensible nature of the later calibration period, the post-2005 calibration period.
Q. I'm going to ask you about that. But we see the spike in trust payments in 2008, 2009, 2010. That's in part to address the -- an issue I believe you testified about on Friday, and that's that the trusts are paying a backlog of claims that built up over the 2000s?
A. Say again? The trusts are paying --
Q. A backlog of claims that built up against the underlying debtors during the decade, correct?
A. Yes, and two things are going on. What happens at the front end of these trusts is in some ways distinguishable from the future. In addition to the backlog of claims I was trying to say on Direct, there are also prepetition settlements by parent corporations. Now in the Halliburton situation for Dresser, those were paid outside the trust. But currently the trend seems to be that the prepetition settlements, a lot of which are made by the parent company, are paid at the front

end of the opening of the bankruptcy as well. So not only is there the backlog of claimants who've been waiting -- you know, sometimes a very long period of time as in Quigley -- to file their claims, but in addition prepetition settlements which were made by the debtor are waiting, because those are now paid at the time the trust opens, rather than as was the case in, I think -- at least an early example of that, Halliburton's prepetition settlements on behalf of DII Dresser.

Q. Okay. So in any event, the huge spike in payments early on is in large part, these are payments of claims in the past, claims that defendants in the tort system would have already paid, correct?

A. Well, I don't know if they would have paid them or they were still not settling them. I can't tell you whether they would have paid them or not.

Q. Well, you've done no analysis to determine one way or the other?

A. Well, I don't know for all defendants whether the claims that are paid by the trust, are waiting in the queue not -- I mean, the timing is really unknown for the whole system --

Q. But the time --

A. -- in my view.

Q. But the timing is important, you would agree, in order to determine whether payments from the trust would result in the

huge downward pressure that you said you believed would take place?

A. Well, again, but it is unknown. That is, I don't know -- in a general way it's clear that many claimants are forced to wait during the pendency of the bankruptcies, and not only are they people who will be settling with the trust, but they are people who have already settled, and are waiting for their prepetition settlements to actually be paid. How that does get paid with regard to any individual and any other defendant, is not something I know.

Q. It's not something you know, but my question was a little bit different. That is, it would be information that would be important for you to have, if you were going to analyze whether these trust payments would provide the type of downward pressure that you testified you expected in 2009?

A. There's no way --

MR. GUY: Objection, Your Honor. The ASARCO report is 2007. Mr. Cassada I think keeps on referring to it as 2009. We can put it on the screen if you'd like.

MR. CASSADA: It is 2007, but she testified in her deposition this was her belief when she submitted her reports in 2009, Mr. Guy. And she's testified --

THE COURT: All right. Let's go ahead and answer the question.

THE WITNESS: I don't think what you're asking is

knowable.
BY MR. CASSADA:
Q. Yeah, I understand you don't think it's knowable, but it would be very useful to have that information if you were to determine whether the type of downward pressure you expected would actually occur. My question is not whether it's knowable, but just whether --
A. If it's not knowable, I don't know whether it would be useful or not. I mean, as I said, I'm data driven. You're saying that makes for simple modeling. It doesn't make for a lot of speculation.
Q. Okay. But let me -- so you have no opinion regarding whether that would be useful information in order to determine whether the downward pressure would actually take place?
MR. GUY: Objection; asked and answered, Your Honor.
THE COURT: Sustained. Let's go on.
BY MR. CASSADA:
Q. Now you say it's not knowable, we talked about this a little bit in the deposition. But you understand, don't you, that Garlock asked for that information in this bankruptcy case? And actually received some data from the DCPF trust?
A. I do know that Garlock received and we received data from the Delaware Claims Processing Facility.
Q. Was that data not useful to you in answering this very question in matching the timing of the payments?

A. Well, Dr. Bates reached some conclusions from it, and they were very important to him. But he only had about half the claimants represented. So we withheld and withhold judgment on that.
Q. So he only had half of the claimants represented because Garlock was unable to get the information on the other claimants?
A. Again, I'm not speculating on why.
Q. Well, yeah, that's what you acknowledged in your --
A. I said, it's certainly a possibility.
Q. Okay. But you didn't analyze the data from the half of the claimants to see if they provided any information on the timing of the payments?
A. Well, we wanted to know what had happened to the other half and didn't know. So it was not -- we looked at it, but it was not a major factor for us.
Q. You looked at it, but you didn't reach any -- undertake any analysis on the timing question?
A. Tell me again what -- repeat to me where you are and what the timing question is now. We're a long way downward on --
Q. We're in our bankruptcy case now, and you've got the data on the DCPF Trust, which you say is only half --
A. Getting -- it's not a trust. DCPF is the Delaware Claims Processing Facility. It itself, I believe it has 10 --
Q. It has 10 --

A. -- trusts for whom it processes claims.

MR. GUY: Your Honor, may the witness finish her answer?

THE COURT: Yeah --

MR. CASSADA: I believe she was finished, Your Honor.

Q. When I refer to the DCPF Trust, I'm talking about the 10 trusts that the DCPF serves as claims processor for.

A. Okay.

Q. And those are many of those major eight defendants that you talked about in your ASARCO report, right?

A. Well, it has a set of major defendants, and now Verus has another very large set. And Manville Claim Processing Facility, CRMC, the Claims Resolution Management Corporation has and will have another group. And there are some of these trusts which manage with an internal staff. And then there are the four trusts, I believe, two Thorpes, Western and Plant, which are in the sort of -- we call them briefly the Western Trusts, which have a separate claims processing facility. So there are a lot of other operations out there.

Q. Yeah. But back to my question. And I don't believe I've gotten an answer to it, that is, you didn't analyze the data that Garlock was successful in receiving from the DCPF-related trusts in order to consider this timing issue?

A. Well, as I said, we discovered that it was not

comprehensive. Maybe through no fault of Garlock's, and therefore noted that Dr. Bates had reached a conclusion about it, but did not go further than that.

Q. So you analyzed it to conclude that it wasn't sufficient to provide --

MR. GUY: Objection; asked and answered, Your Honor.

BY MR. CASSADA:

Q. -- information about the question?

THE COURT: Sustained.

BY MR. CASSADA:

Q. Now before you chose your calibration period in this case, you did not consider whether Garlock would receive a considerable downward pressure that you -- on the settlement values that you had predicted for ASARCO, correct?

A. I think I've already said that I did expect it, but our experience since then, along with the things Towers Watson had been saying, does not support the notion that it is occurring.

Q. Okay. So the timing of when your views on this subject changed is what I'm getting at.

When Garlock filed this case and you were appointed as claim's estimator, you were of the view then that defendants like Garlock would receive future downward pressure on their settlement values, correct?

A. Well, I don't think I had any views at that point with respect to Garlock, no views at all. And what I'm saying is,

as I sit here today, and as we started to do analysis, one of the things I knew about, was the record of the solvent companies for whom we do every quarter and every year, over, and over, and over again, forecasts for SEC purposes.

And as you know, I don't distinguish between the applicability of the SEC forecasts and other pieces of analysis, and there we are not seeing it.

I think I told you also in deposition that I went back into the Towers Watson actuarial conferences and they confirm that view.

Q. So when you -- when the case was filed and you're appointed as estimator, you had an open mind on the issue?

A. Yes.

Q. Okay. And you knew that it was an issue, right, because you had brought it up in ASARCO, and you I take it read Garlock's information brief which talked about the importance of that issue to Garlock?

A. Yes.

Q. Okay. In fact, you did not consider the potential trust impact on Garlock until long after Dr. Bates and you rendered your initial reports?

A. I can't tell you when I thought about it, but I've been thinking about this situation of the solvent defendants over and over, and you can see the list of how many there are in the qualifications that Mr. Guy put forward. So I think about

them all the time.

In addition, the rules for -- most companies have consulted actuarial and legal consultants in determining what steps they have to go through in order to file a qualified contingent claim forecast for asbestos. And one of the things that most of those consultants and actuarials tell them is, every year they have to review the overall situation in the asbestos litigation in general.

So every year, several times a year, a little bell goes off and I see an agenda for the next company analysis and its discussion by -- usually a combined group of the finance and legal folks from the particular company, and we reconsider what is happening. Also I'm looking at their data and I can see that the pressure on them is not decreasing.

Q. Okay. Yeah. But, in connection with this case --

A. Um-hmm.

Q. -- this was an issue in this case, and I mean, to be precise, you didn't consider this issue until long after all the reports were in and you were preparing for your deposition, correct?

MR. GUY: Objection; asked and answered, Your Honor.

THE COURT: Sustained.

MR. CASSADA: I have not asked that question.

THE COURT: She's answered.

MR. CASSADA: I'm sorry?

THE COURT: I think she's provided that information.
MR. CASSADA: Let me -- well --
Q. Just to provide what she said during her deposition about this very issue and the timing and how it differs from her answer today, I'd like to actually play a portion of her --
MR. GUY: Your Honor, they're welcome to submit the transcript, but we're going over plowed grounds.
THE COURT: Well, we'll let him play this.
(Video deposition plays.)
(Video deposition stopped.)
BY MR. CASSADA:
Q. Okay. So you considered the issue for the first time just two weeks before your deposition?
MR. GUY: Objection; asked and answered, Your Honor.
THE COURT: Go ahead.
THE WITNESS: I was -- you were asking me about the specific Towers Watson contribution. I'm sitting there every year looking at the results for SEC examination -- SEC filings -- sorry, on contingent liability. So how those decisions come together is in some general way.
What we were talking about was when did I look for the Towers Watson material as confirmation of what I was seeing from the solvent defendants I deal with every quarter.
BY MR. CASSADA:
Q. You recognize, don't you, and I believe you testified to

this effect in your deposition, that lack of trust transparency could be the reason why defendants have not received relief from the trust, correct?

A. I don't think that -- first, I think the trans-- as I've already said, I think the transparency business has become a buzz word, and should be used more generally.

As I've said earlier this morning, I am someone who went looking for data on experience in the early days of the asbestos claims facility, because they wanted to have a formulaic approach to assigning responsibility for shares. And nobody wanted to give us anything. They eventually did.

Then I went looking again, the asbestos claims facility had long gone. I went looking again when the FAIR Act was being considered, and it was my responsibility to forecast and assist the CBO to understand what kinds of funds would be necessary in the future for the whole array of solvent defendants who would join such a trust.

And again, the companies didn't want to provide me that data. Now some of them, not all of them, but some of them eventually did, with pressure from the law firms which were supporting the work on the legislation, because they needed numbers. They needed to be able to say to the Congress, we're contributing "X" from the companies to top and provide later funding for what the insurers will be asked to provide. I mean, what the insurance reserves were, was easily calculable.

Q. I don't believe you're answering my question.
A. Reask it.
Q. I asked you that you recognize that the lack of trust transparency could be a reason why defendants had not received the relief and formed the downward pressure on settlement values from the trust. That's a question I asked you during your deposition.
A. Right.
Q. And you acknowledge that could be a reason.
A. Could be. But all I'm saying to you is --
Q. That's all I'm asking.
A. -- this has taken on a life of its own. Nobody is transparent or wants to be transparent on either the defendant or the plaintiff side. People don't like to give up their data.
Q. You recognize that -- and I believe you stated, the trust transparency is a very important national issue, and that was brought out in the Tillinghast papers that you said you had reviewed?
A. Well, yes. There was a piece of legislation, in fact I'm well aware of that.
Q. I think you understood that Mr. Guy's partner, James Stengel, is a major proponent of trust transparency and testified in front of Congress on that?
A. I do, and he was my client in the FAIR Act -- or one of

my clients in the FAIR Act, but probably one of the leading clients, so, yes.

Q. But you've not analyzed, and you don't know whether Garlock failed to receive relief in the past which you say -- which you apparently concluded, because of lack of transparency?

A. I do not.

Q. Okay. During your deposition you testified that you looked at Garlock's most recent five-year period to consider whether there was empirical evidence that it received relief from the trust, and you stated that its indemnity values showed no such evidence because they were increasing. Do you recall that?

A. Say again, because I'm looking at this chart.

Q. Well, one of the things --

A. What -- go ahead.

Q. One of the things we've explored in your deposition is whether you had any empirical evidence that Garlock had not received relief from the trust prior to its bankruptcy and you said that there was no evidence. And you pointed to its -- the history in the five years preceding the case, and I believe what you said the increasing settlement amount.

A. Well, the positive pay -- don't forget for me I tried to make an actual five-year period, and 2005 therefore is in there for only half the year, and 2010 is in there for the

remaining half of the year, basically before and after, so we have a complete five-year period.

So the -- I'm talking with my hands and that's silly in this situation. So the 2010 and 2005 results are -- let's call it unusual. The settled indemnity payments are pretty flat, not looking at 2005 and 2010, call them about $70,000 of positive pay case. And the closed indemnity -- that is with the zeros in -- results are pretty flat. Call it -- there's a little more variation there because of the way the zeros usually operate. But call it, you know, 35 to 45 or something like that on average.

So if we were expecting that starting in -- sometime in or after 2005 the trusts were going to come in, pay huge amounts of money which they are doing, and cause those settled indemnity values in particular to go down, it doesn't seem to have happened. They're pretty flat taking into account the special nature of our use of 2005 and 2010.

Q. But you considered the first half of 2010 and you -- we see this spike in your interpretation of the data, settlement values 92,000 --

A. Yeah. We don't -- I can see the 92,000 it's right up there. But in our regular work, there's periodicity in these settlements, and a half a year -- I want to look at the whole year at a minimum.

Q. Okay.

A. Because during the year, you can see that many different things happen.

Do these results also reflect knowledge in the company that the bankruptcy is about to happen and a strategy for the cases it wishes to settle before the declaration and after? I don't know. I have no way of knowing that.

But using a half a year is not a very good idea usually, until the year ends. Companies are working on these --

Q. Okay.

A. -- year long and so --

Q. When I --

A. Half a year is likely to be a sport.

Q. It wasn't a good idea but you used it. And you testified before, I think you acknowledged last Friday, that you included in the payment in this here pretty large judgment, that Garlock had actually suffered before your calibration period --

A. No --

Q. -- but paid -- but paid in prior years during your calibration period, but in any event, several years before 2010.

So you included three judgments -- Puller, Snyder and Wilson -- that had been paid in previous years. You included that in 2010, and it indicated a spike in the average settlement amount, right?

A. I didn't say that there was a spike. What I said was -- and these three have been discussed endlessly, but let's do it again.

Q. Well, I just want to know whether that's what you did --

MR. GUY: Your Honor, may the witness --

MR. CASSADA: -- understand why you did it --

MR. GUY: -- finish her answer?

THE COURT: Let her answer the question.

MR. CASSADA: Okay.

THE WITNESS: These three claims shown in the database, with the last payment date of 2010. When Dr. Garcia or Dr. Bates -- or and Dr. Bates suggested that they were misplaced we looked further. We discovered that the 2010 payment was a payment to Garlock for contribution from trusts. And that these claimants had received their payments in 2006 and 2007, which was in our calibration period. So for our analytic purposes, it didn't make any difference.

Second, we've already said we do not believe that verdict date is the correct date to use. Because as others have testified, after a verdict, stuff happens. There's an appeal by one side or the other, one side or the other may decide to settle. And in addition here, there's the step of obtaining contribution from the trusts.

So those three cases which we originally had in 2010 were recalculated as if they were in 2006 and 2007 and doesn't

make any difference because they're still in the calibration period.

Now I recognize that you're saying that the $92,000 there may be affected by those three cases, which would make it more in line probably, I mean, I don't know what the result is -- but it would make it more in line with the about 70 to $75,000 that was typical of the settled indemnity in the earlier period.

I just don't see that these years are very different from each other. And I continue to believe that the half years are reasonably unreliable, given our experience with solvent defendants.

BY MR. CASSADA:

Q. Well, you included the half year and actually if we take the judgments that were paid you testified in 2006 and 2007 and you move them there, it has a dramatic affect on the trend in average settlement amount. As you see here the $92,000 figure you have would decrease to $59,836.

MR. GUY: Your Honor, this is Dr. Garcia's report. He's welcome to ask Dr. Garcia about it.

THE COURT: Well, he can ask her if she agrees with it.

BY MR. CASSADA:

Q. Did you undertake to see what the result would have been in your analysis about average settlement payments, if you had

put the judgment payments in their proper year?
A. First, I'm not agreeing to a proper year after all of this, but I won't go through it again.
Second, we had chosen a calibration period. So our focus was not on the year-to-year variations, but on the aggregate. And it didn't affect the aggregate for the reasons that I've already stated.
Q. But it did affect the trend, and the trend --
A. We did not -- you know, Mr. Cassada, that we did not make a trend analysis here. Dr. Peterson did. We did not. When we see a trend rather than seeing relative stability -- it's never absolute -- we do not do the trend analysis and we didn't do it here. We simply said what's the result of looking at the five-year calibration period. And we did not calculate a trend forward because we thought it wasn't there.
Q. Well the trend analysis would have been important and I think you've testified about this earlier, in determining whether Garlock was or had already received relief from trust payments. And if we take the --
A. I was not as wholly focused on the trusts as you are. So we were trying to look at Garlock's experience, and therefore here did not do an increase analysis. We said this looks flat, period.
Q. Well when you take the payments and put them in the proper years -- and I understand that you think that even

though the judgments were paid many years before 2010, Garlock received contribution payments in 2010, and therefore you have moved the payments to that year.

But if you move the payments to the year they were actually made, then you see a trend here in the overall resolution amount, a remarkably downward trend.

If you had done that, would this have piqued your interest? Would you have been interested in determining what it was that was driving Garlock's resolution amounts down?

A. I do not know.

Q. Okay. You also had testified the reason you chose 2005 as the beginning of your calibration period, there was some unidentified strategic change that occurred in that year. You said something happened and it would be speculation for you to understand what happened or to say what happened. Do you recall that?

A. I do.

Q. Okay. And you picked this date and determined this only by trying to find a period where the numbers look similar to the very recent past; is that correct? Do I understand that correctly?

A. I just looked at those numbers and you can see there that earlier Garlock was in a mode -- I'm -- perfectly reasonable mode which was basically to settle everything, and that 2005 it didn't look like that was what was happening. Surely there

was a change, and moving forward we were in a different behavior mode.

Q. There was a change, but you don't ever investigate the reason why settlements change over time, correct, because you think those are secondarily important to your work?

A. I said I think here that I don't speculate. I could speculate on the reason, but I don't want to do that.

Q. Right. But you have to speculate because you didn't investigate?

A. What I would have had to investigate would have remained speculative. It would have been the role of insurance recoveries in those early years.

My experience of the property casualty industry is that the asbestos insurers want to run those policies out. And they have a role in all of the decision-making of the companies too, and it would not surprise me at all if what was going on was that the insurers were offering financial incentives to cause the company to settle as much as possible and not to litigate anything. Do I know that was happening? I do not. Was I prepared to undertake an elaborate archeological expedition into the role of insurance? I was not.

Q. Okay. But you didn't -- I take it, then, you didn't understand that the evidence in this case was that Garlock had resolved its insurance long before -- most of its insurance

long before the 2000s and had control over the defense of asbestos claims, and therefore insured decisions weren't impacting Garlock's settlement decision?

A. Well as I said, I didn't proceed to investigate the reasons, because I know what a nightmare it is to try and untangle some of that.

Q. Okay. But you --

A. Probably there are agreements -- probably those agreements spell out not an immediate cash payment, but some of them are year to year from the insurers, and one would have had to figure out what those agreements looked like. We didn't do it. And I have said to you we didn't do it. But that means we couldn't have figured out what was responsible for the change in strategy.

Q. So you didn't do it in part because it's not important to your work and methodology?

MR. GUY: Objection; asked and answered three times, Your Honor.

THE COURT: Sustained.

BY MR. CASSADA:

Q. In your past estimation work, the future often has proven not to resemble the recent past, correct?

A. If that's a way of saying we've been low, and trusts have reduced their payment percentages; that is true.

Q. Okay. But sometimes you've been high. I mean, not only

high, but gargantuanly high. I mean, in your work in the Fibreboard case and the Owens Corning case -- and by the way, that's the one where you held out as the one where the judge accepted your opinion, correct?

A. Yes, sir.

Q. And in that case --

A. He did.

Q. -- you estimated under three different scenarios using three different calibration periods, hundreds and hundreds of thousands of nonmalignant claims, which you projected would cost billions and billions of dollars, correct?

A. I do not remember the exact numbers, but --

Q. But you --

A. -- at the time that we were doing this estimation, there were huge numbers of nonmalignant claims. Then as many people have said here, Judge Jack made an important and remarkable decision in the context of the Corpus Christi case, and that changed what was occurring with respect to nonmalignant claims. And it also changed what was going to occur with regard to the mesothelioma claims.

We are data driven. We didn't anticipate her decision. I don't see how we could have anticipated her decision. It was a remarkable decision, and things change.

That is, the nonmalignant claims virtually dried up and we've been waiting to see what would happen next. One thing

which may happen next in connection with litigation over the lung cancer cases, is that some of this nonmalignant claim will re-emerge, but it hasn't happened yet.

Q. But the point is, you've said you're data driven. You didn't look behind the data to see -- to try and understand what was driving those nonmalignant claims in Owens Corning and other cases.

A. Well, I --

Q. You simply took the data as you found it and assumed that the future would look like your calibration period.

A. And I -- I understood what was behind it in the sense that the history of the pre-2005 asbestos litigation, had to do with the earlier world of screening trailers. Whereas Judge Jack pointed out, people went in at one end, had some medical evaluation, and came out the other end and saw a lawyer right at the steps of the screening trailers which came to sites where people may have been candidates for being exposed to asbestos. I don't think anybody could ignore that. And we knew it too.

What we didn't know was that a federal judge in an MDL, who had previously been a nurse, would look at the silica claims which were before her and order a series of steps which suggested that the silica claims -- claimants were the same claimants who had been showing up in asbestos.

Interestingly, in terms of foresight in the Dresser case

which precedes these, there was also pressure from silica, and we're the ones who said there should not be very many silica claims and advised Halliburton of that. They ended up therefore doing -- funding the silica trust which was formed with a declining balance mode which goes on to this day.

We were right about the fact that there shouldn't be a lot of silica claims. We didn't understand at the time exactly what the link was, but Judge Jack did. And so we learned from her opinion and watched the changes as they came in.

Q. Right. You're aware, aren't you, that Dr. Bates at the same time that you were predicting this sharp increase or this continued onslaught of nonmalignant claims, he did look at the underlying process that was driving those claims and he predicted a sharp drop off in nonmalignant claims in the future. You're aware of that, aren't you?

A. Well, I've heard it here relying on his SEC forecasting material and not the theory he's relying on today.

But yes, I've heard that that was true here, and I congratulate him.

Q. And you see that there is evidence that that was his opinion before Judge Jack's silica litigation opinion?

A. Well I've heard what we all have heard here from the SEC -- and from the SEC filings.

Q. Okay. Which were for the first one was 12/31/2004. Let

me -- and you talk about what you understand now about what was driving those nonmalignant claims. But the point of this is, you didn't look at that process before and try to understand it. You simply took the past as prologue and projected or extrapolated those into the future?

MR. GUY: Objection; asked and answered.

THE COURT: Go ahead and see if you can answer it again.

THE WITNESS: It's not -- you keep implying that we're wearing blinders or something like that. We're not. We understand and have read -- we had seen Dr. Brickman's work before, for example. We understood a lot of what the argument was over the nonmalignant claims. And as I said, great for Dr. Bates having predicted that in your SEC forecasting which you now say is completely different than anything you're doing in your bankruptcy projection, that the nonmalignants were going to virtually disappear. We didn't feel free to speculate on that until Judge Jack made her decision. I have no hesitation.

Moreover, in the -- Judge Fullam asked for variations, and following I believe those variations, those -- if the timing was right. I can't remember how the timing works. He may have asked for and received revised numbers once the reality was that the situation had shifted. But I don't remember how the dates fit together so I'm not alleging

that that really happened.
BY MR. CASSADA:
Q. I want to talk with you briefly about another case that you mentioned where a court relied on your work, and that's the A.H. Robins case. Do you recall that was not an asbestos case, right?
A. I recall.
Q. And in that case the debtor funded 100 percent trust and its shareholders received a substantial distribution from the bankruptcy case, correct?
A. Say that again?
Q. The debtors' in that case funded 100 percent --
A. You moved the slide forward, I think to the Robins --
Q. I'm not at the slide yet.
A. Oh.
Q. The debtors' funded 100 percent trust and the shareholders received a substantial distribution in that; is that correct?
A. In addition, Aetna funded an additional trust for the late claimants.
Q. Right. And Aetna was one of Robins' insurers?
A. It was Robins' only insurer. This is not asbestos. They had insured them since the 1890s for across the board property casualty liability.
Q. Now that was a case -- now in that case, unlike this case

and some of the other work you described, you did not extrapolate the past into the future, correct?
A. Well, first -- there are no futures in the A.H. Robins case. There aren't any at all.
Q. There was no futures' representative appointed in that case?
A. Not only was there not a futures' representative, there were not future claimants. The A.H. Robins case has to do with a contraceptive called the Dalkon Shield which A.H. Robins bought and then sold, and by the time of the case that product had been completely removed from the market so there really were not future claims. There were late claimants, but there was -- there were no future claimants. So there was no future representative. I mean there was -- there was not going to be the need for one. What was there was there.
Q. We can look at the case and determine whether or not there was a future's representative --
A. I'm telling you there was not.
Q. Okay. Well the case will state whether there was one or not. I know you -- but in any event, there were future claims to be -- there were future resolutions to be made and claims, correct?
A. Not in the sense that we use the term futures. I want to distinguish between futures in the sense we use it in asbestos cases, where we're expecting that these claims will go for a

very long time into the future.

We were not expecting that in the A.H. Robins case because of the removal of this physical product. We're not talking fibers in the air. This is a physical thing. And when the case started, there was a lot of publicity about the use of the product, and anybody who, you know, you would have had to be not paying any attention in order for you to miss the fact that these were being considered dangerous. And more important than that, no one could get new ones, once this started, so --

Q. Okay.

A. -- there weren't futures in the sense that we talk about asbestos.

Q. Okay. Well let me focus you on the issue of the subject that I'm interested in. There were pending claims, and in that case there was a projection that had to be made -- the resolutions of those pending claims. And the point is that you did not apply -- merely extrapolate the experience for claims that had been settled in the past to the pending claims. You recall that, correct?

A. Well, we did produce an estimate.

Q. I understand that, but you did not extrapolate the debtors' experience from the pending claims?

A. With regard to the claim values, we had a unique advantage in that case which was not accessible to anyone

else. Our client had handled all the claims for A.H. Robins for the Dalkon Shield. And the claims handlers who formed the unit that was handling the Dalkon Shield claims before the bankruptcy, were still at Aetna. And the enormous advantage that we had, was that rather than estimating the values, the court had provided very data-rich profiles which had been vetted through neutrals and argued over.

So in essence, we had profiles of the individuals who had previously received compensation. And I used that advantage by asking those individuals who were handling the claims to value actual claimants one by one, and then use those -- did extrapolate those into the future.

Now Judge Merhige was skeptical about the validity of that approach, and it was unique to that case but in the end, he accepted it. And he was skeptical because he regarded those claims adjusters as low ballers, which they usually are. But we had anticipated that problem and done a lot of training to suggest to them they were not to low ball the evaluations of the pending claims. They needed to provide values which in their world would ensure that they would settle very rapidly. So our methodology was different.

But when you say we didn't extrapolate, we extrapolated from a smaller number of cases that they valued and we entered them into a matrix of the different injuries which women were getting, to try and forecast what the total value of the case

was. So we did extrapolate from a sample of cases to the universe using that injury matrix.

Q. Okay. But in that case you used the questionnaires submitted to the court and determined that future cases would not resemble the resolved cases, preventing an extrapolation. Do you recall that? And this is --

A. I'm reading here because that just went up.

Q. This is testimony, you said "Well because I found that the distribution of injuries in the pending cases was quite different than the distribution of injuries in the resolved cases, and also, in many ways of equal or more importance, I found that the presence of complicating factors was much greater in the records of the claimants in the McGovern process in the pending sample than in the resolved sample. I knew that it would be very difficult to do a kind of simple-minded translation of the values for the resolved cases to the values for the pending claims, because the claims' handlers and plaintiffs' lawyers were looking at -- in a world of prepetition resolution that was going to turn out to be very, very different than the world that was being looked at in the pending cases." Correct?

MR. GUY: Your Honor, same objection --

THE COURT: Overruled.

THE WITNESS: I see it. I can't say I remember exactly back to 1997 what the exact circumstances were, but I

do see it.

BY MR. CASSADA:

Q. So you used the questionnaires in that case, and you concluded from the questionnaires that the pending cases didn't resemble the past resolved cases?

A. The reason that I used the questionnaires there, was that Judge Merhige had set up an elaborate process to ensure what I've been calling second-level agreement. There was a special master, Francis McGovern now at Duke University Law School, and he had neutrals who were assisting him.

I would say -- I can't see around this, but Dr. Peterson and Dr. Relles were his neutrals, and their responsibility was to develop a database which all the parties to the case, the insurer, the debtor, the plaintiffs, and there's a fourth party in there somewhere, the unsecured creditors, probably, would agree on. And there was almost a two-year process in which the questionnaire responses were data entered by the neutrals. Everyone looked at them. We fought about what was correct and what was not correct. And until we reached disagreement that was fatal, we didn't see the judge. But we did -- when there was disagreement, see the judge and the judge decided.

I mean, this was a case in which the disagreement on the data collection was about such things as whether we would be able to ask the debtor how many sexual partners an individual

claimant had. And plaintiffs -- debtor, yes; plaintiffs no; Judge, I believe, yes. When all of that was done, a set of neutrals put up the data in a database which was distributed to everyone, and I believe there was second-level agreement, that is, everyone believed that the data was what had been in the questionnaires and it was reliable and that was the basis for everybody's estimate.

Now, once that data was up, I had these claims adjusters at my ready, and nobody knows better than they do what the elements that they see in these complex individual files was. So I used that advantage. But it's a different circumstance.

Q. The case is a different circumstance --

A. It had no futures.

Q. -- and the methodology was different.

And the Fourth Circuit opinion that you cited, the Fourth Circuit reviewed what you actually did with the questionnaires.

And the opinion states that you took the return questionnaires as a representative sample and weeded out those for example with no medical proof of the use of Dalkon Shield.

So you weeded out claims like Dr. Bates in this case weeded out claims of people who never -- who couldn't identify Garlock products?

A. Well, actually --

Q. You classified --

MR. GUY: Let her answer the question asked.

THE COURT: All right.

MR. CASSADA: I haven't asked the question yet.

Q. You classified the claims that arose with and without complications and the nature of injury claim. And the Fourth Circuit went on to observe that Dr. Rabinovitz further concluded that she thought there might be a considerable reduction from disallowance of claims. That same reduction is not unreasonable -- that some reduction is not unreasonable is illustrated by a remark we have come across in the record that one claimant apparently said she took two Dalkon Shields a day.

So you studied the questionnaires in that case, and you made judgments about meritorious claims and you eliminated claims from a questionnaire population on that basis.

MR. GUY: Objection --

BY MR. CASSADA:

Q. Correct?

MR. GUY: If that's a question, it's compound, narrative and vague.

THE COURT: If you can answer --

THE WITNESS: Let me take this question paragraph by paragraph because I can't answer it as a whole and it shouldn't be answered as a whole.

The court is saying -- the appeals court is saying

that we weeded out those with no medical proof of the use of the Dalkon Shield. Actually, if you look at the report, you will see that we estimated compensating a much larger group of claimants than the debtor did. And that is because we knew that these devices had been widely distributed to medical services at women's colleges. I used to call this group of claimants my Wesley moms -- Wesley gals, rather.

They could not produce proof of the use of the Dalkon Shield because the university clinics had destroyed the records. They moved through very fast, every four or five years as classes move out. And so we did make a higher estimate, based on people with no medical proof. Because it was probable from their later experience that they had used the Dalkon Shield.

So with all due respect to the appeals court, if you look at the detail of our report, we actually increased the estimate of compensable claimants to include a proportion of those who could not prove that they used the Dalkon Shield.

The second paragraph is correct. They were classified according to the complication and the nature of the injuries claimed, but they missed the fact which is in the report, that some of those folks with no proof were allowed and did receive compensation.

BY MR. CASSADA:

Q. Are you finished?

A. Yes, sir.
Q. Okay. In this case though, you did not use any of the information obtained from current claimants through the claimant questionnaires, correct?
A. I did not.
Q. Okay. And you -- I think you said you determined that they were unusable. How many did you look at and how many contained what you described as contradictory information?
A. I can't tell you. We pulled a sample, looked at them. Couldn't really reach a decision about whether the information was showing exposure or not showing exposure. Didn't have recourse to the neutral process to reach second-level agreements, so that all the experts could be using the same database, and were not comfortable in the absence of such a process, accepting Dr. Garcia and Dr. Bates' judgment. Although they're perfectly excellent analysts and database developers, but we were not comfortable in using those judgments, and therefore didn't use them.
Q. Did you see the correspondence from lawyers saying that their clients were in the database, didn't have claims against Garlock or didn't have mesothelioma?
A. I don't remember whether we saw that or not. We were looking primarily at exposure-related issues since that was sort of the core.
I wish that there had been some neutral process in which

Bates White sent out a letter and said in advance, we're going to take out the following individuals for the following reasons on perfectly uncontroversial grounds and we're sending you their names, we're sending you the backup, because we'll need, down the line, second-level agreement. We're putting this forward to you and we should have a meeting or, you know, we should get together. But that didn't happen. So we were not comfortable making those decisions on our own. We're not a jury.

Q. All right. So, I mean if that -- if that did happen, you don't know about it?

A. I know that some of the claims that he removed, he alleged had -- or they both alleged had made those findings. But he bases his analysis, mainly on a much more complicated set of decisions about exposure through the matrix provided by Dr. Henshaw.

Q. But my question's a little bit different. That is, if the debtors did send around a list of people who had returned the questionnaires or responded that they didn't have claims, or they didn't have claims against Garlock or didn't have mesothelioma, you're saying that if that did happen, you don't know about it?

A. I never received a list which said the following 10 named individuals should be removed from the database because they've said they don't have mesothelioma.

Q. Okay.
A. Or they don't have something else. I don't -- if there was such a process, we were not a part of it.
Q. Okay. And so I take it you didn't use the supplemental exposure questionnaire or the supplemental payment questionnaire responses either?
A. For the same reason.
Q. Nor did you use the data that Garlock received from the Delaware Claims Processing Facility?
A. I've already described the fact that -- that we looked at more closely.
Q. But you decided that it was incomplete because Garlock didn't get all the data it wanted?
A. Well, it didn't get all the data, yes.
Q. And I believe you acknowledge that it requested the data, but didn't get it?
A. I did.
Q. Okay. Let me shift subjects then. Just to understand at the core of your estimation approach, you're predicting what it would have cost Garlock to resolve claims principally through settlement in the tort system, correct?
A. Settlement and verdicts, we followed the data.
Q. Okay. So -- so that's it. You're focused on the tort system and you're estimating what the payments would have been in the tort system?

A. That is correct. And we're following what we believe the Eagle-Picher precedent suggests that we do.
Q. You described your work in your deposition as predicting the value of a future stream of agreements?
A. Well, we tried to do what the Judge asked us to do. And I believe that was in a context in which you were trying to get me to say that these were contract claims. And I can't say that because I'm not a lawyer. I'm not comfortable using legal terms. Sometimes they slip in, but it isn't intentional.
Q. Okay.
A. So I read to you yesterday -- no, not yesterday, Friday, the passage from the estimation order, and what it suggests is that what we should be estimating is the aggregate value of payments. I may have gotten into something slightly different because I was trying to avoid using the word "contract".
Q. So -- but in any event, in this case, you're applying the same methodology and measuring the same thing with the exception of the defense costs issue that you did in prior cases where you were engaged?
A. Yes.
Q. Okay. And on Friday you went through numerous previous cases where you had actually rendered opinions. Do you recall whether in any of those cases the debtor disputed that its product caused disease?

A. Can you put the list up again? I can only think about -- can you put the list up?
Q. Sure.
A. Let's look --
Q. These are court-appointed FCRs?
A. Right.
Q. In each of these cases except for Congoleum, isn't it true that there had been an agreement reached between the debtor and -- the claimants and the debtor was not raising any issue in that case about whether its product actually caused disease, correct?
MR. GUY: We have no agreement with Garlock.
MR. CASSADA: I just said with the exception of that case.
THE COURT: You said Congoleum.
MR. CASSADA: I misspoke, thank you for correcting me, Mr. Guy.
THE WITNESS: Okay. So in the cases which -- in the cases in which I did not testify Lummus, AC and S. Congo, Thorpe, Plant, THAN, there are always allegations that the debtor has often taken the position that its product didn't cause any damage or didn't cause anything. But there's no adjudication of that.
In Celotex and Carey Canada, as I think I mentioned, there was no data on the past. But Carey Canada is a leading

asbestos miner. So a lot of that case had to do with mining. I think no one alleged that Carey had not produced a product. It's more ambiguous about Celotex.

Q. But can you recall any specific case or you're not aware of any specific case, are you, where the debtors actually disputed that their products caused mesothelioma?

A. Well, I'm looking here, for example, there are some. Let's talk about Lummus at the start since it's up there at the top of the deck -- top of the list. Lummus did dispute that. Lummus has two, as I remember, streams of exposure. One was a business they had been in long ago, and it had to do with the provision of products of power plants. But the other business is a design business for industrial operations.

So Lummus disputed that the design of the facilities which were eventually constructed based on the designs they had provided, had nothing to do with actual exposure to a product, and that's one of the things that the trust -- that case settled, and that's one of the things that the trust has to deal with.

Q. But your estimation work in that case was after the settlement had been reached?

A. No, it had not -- the --

Q. Settlement with the actual debtor?

A. Well, that's -- I don't know what you mean. Lummus was included as an asset in the Combustion Engineering litigation.

And the appeals court said, you can't just toss a company into bankruptcy so that it can be used as a payment stream.

Q. That was the Third Circuit's decision in the Combustion Engineering case?

A. Correct, for Combustion Engineering. So Lummus came out and had to be separately estimated and a separate value placed on its claims. And one of the ambiguities was -- was there were very few of those early industrial claims, and it was in the design business. And at that stage its positions -- its position, not necessarily CE's position was -- its design had nothing to do with it --

Q. Excuse me. I may have asked a question and I would like to reframe it if I can --

A. Sure.

Q. -- just to make this a little more efficient.

A. Sure.

Q. In all these other cases, there has been agreements reached before the estimations that you worked on that had actually taken place; isn't that correct?

A. No.

Q. There had been agreements reached with the debtor company that allegedly had the liability?

A. Well, I'm just saying that's not true with Lummus. It came out, and therefore an independent estimate had to be -- had to be made.

Q. But that was an estimate that had to be made in order to confirm a plan based on an agreement with Lummus about the amount it would fund it for a trust, correct?
A. I -- you may know more about this than I do.
Q. Okay.
A. But I do not recall Lummus having been resolved in advance of -- after the Circuit rejected the original plan on the basis that it wasn't being contributed not to cover its own liability, but it was being contributed to cover the liability of Combustion Engineering. Then it came out and the question put to us was, what is its liability. And as I said, it had two streams. One was a pretty conventional industrial product. And the other was this design business, and we were asked to estimate both. And the trusts -- it has two pieces to its trust, one for one product and one for the other.
Q. Okay.
A. And it did -- it did indicate that the design business shouldn't be included.
Q. Let me ask you another question.
You -- focusing on your methodology. You assume under your methodology that defendant's settlements are acknowledgments for their liability for the claims settled, correct?
A. I understand that you're arguing that as a legal matter that is liability. We do assume that the plaintiffs and the

defendants have exercised and -- exercised all their arguments and received all the information that they're going to receive before they make a settlement, and that that process has led the defendant -- the defendant to say at that time, yes, we're responsible for this injury. Maybe not wholly, but we are responsible. We participated in the causation of this injury.

Q. And that's at the core of your methodology, correct?

A. Well, settlements certainly are at the core.

Q. But the idea that when the defendant settling the case -- it's saying to the plaintiff, yes, I caused your injury and that's why I'm paying you this money. That's at the core of your methodology, correct?

MR. GUY: Objection; mischaracterization.

THE COURT: Overruled.

THE WITNESS: Everybody has satisfied the information requirements they wish to have enough, so that the company says, this is my responsibility and the plaintiff's lawyer says, whatever their responsibility is reflected in the amount that they are responsible for paying. Both sides have information. Both sides have negotiated with each other. They're informed. They're talented. They're not settling in the complete absence of information. Quite the reverse. You don't want to call that liability. And I'm sure as a legal matter I'm not equipped to define liability in that way. But they have information about the exposure and that leads to a

financial agreement.

BY MR. CASSADA:

Q. And but it's key to your understanding of settlements then, and when you're referring to liability, you're referring to a process where you understand that the defendant is acknowledging that the defendant's product caused the disease and is actually at least implicitly saying that they haven't settled --

MR. GUY: Objection; asked and answered. The witness has already said she's not a lawyer. She's not making determination as to legal liability --

THE COURT: Sustained.

MR. GUY: And Your Honor, we --

MR. CASSADA: Let me just refer to --

THE COURT: Go ahead, Mr. Guy.

MR. GUY: Your Honor, we agreed that we would put Dr. Rabinovitz on Direct for two hours. That was an agreement reached with all counsel. I tailored my Direct for that exact purpose. And I understand the Court's entered Orders in terms of the time. And the Debtors are seemingly incapable of presenting their case in time of the Order. But I do expect them to honor that agreement. And by my watch, they are two minutes late.

THE COURT: Okay. Wrap it up.

MR. CASSADA: Your Honor, there was no limit placed

on their ability to cross-examine our estimation experts. She is one of the most important witnesses in the case.

MR. GUY: Your Honor, we had an agreement two hours --

MR. CASSADA: We did not have that agreement, Your Honor --

THE COURT: Well, I'm going to stop and let her go in about five minutes, so let's get on with it.

BY MR. CASSADA:

Q. You concluded in your opinion, did you not, Dr. Rabinovitz that the claiming rate from a KPMG incidence model against Garlock would be 80 percent, right?

A. 79.09 percent, correct.

Q. Okay. And I believe you actually used 89 percent in your report; is that correct? Or 80 percent or let's say 79. So just to be clear, what you're saying there is that of the projected incidence that you used for occupational exposed people, the projected incidence of mesothelioma, you are predicting that 79 percent of those people will actually make a claim against Garlock in the future?

A. Yes.

Q. And in 2010 you found or concluded from the data that 94 percent of all of the occupationally exposed people in your incidence model who develop mesothelioma, will assert claims against Garlock that Garlock contributed to the mesothelioma.

Is that -- do I understand that correctly?
A. Two things -- three things. First, these high numbers are not unusual. We see them among solvent defendants who are not in bankruptcy. This is not the only situation which we have seen these high numbers.
Second, as I said previously, the 2010 partial year is not to be relied on too heavily. We combine it with the 2005 partial year '6, '7, '8 and '9 which are complete years. And I think those are better indicators because they are time variations. There are differences during the year, everybody seems to operate -- there's a big rush at various times during the year. So the half years are -- can be, if used alone, a little bit misleading.
Q. Just to put your opinions in perspective. You were saying that Garlock -- that four out of five claimants in every future year are going to claim that Garlock contributed to their illness. That's what you're saying?
A. That's what the data seems to show.
Q. And that 94 percent did during the six months -- I know you say that's not something you rely on.
A. Yes. And I also said you look at solvent defendants all the time, this is not unique to Garlock.
Q. So it would follow, wouldn't it, that if Garlock's going to receive four out of five claims, that those same claimants are going to be making claims against all these other

companies, many of whose liability you estimated, correct?

MR. GUY: Objection; calls for speculation.

THE WITNESS: Yeah, I mean --

THE COURT: Answer it if you can.

THE WITNESS: The answer is, I don't know. I do not think it is unique, is what I'm saying.

How the claimant -- pattern of claiming -- this is a mixture of -- just trying to look -- these are -- I'm not sure this is a list of companies and a list of trusts, it's a very mixed list, so I'm not sure what it's meant to suggest.

BY MR. CASSADA:

Q. But you would have to agree, wouldn't you, that if Garlock's getting 80 percent of these claims and you testified a very small number each year, you would reasonably expect that for any given mesothelioma claimant who sues Garlock, they all have claims against a substantial number of these other companies, many whose liability you estimated?

A. That doesn't mean they're going to pay them. Remember, we say that the claims payment rate is 56 percent, and it varied here, and it varies for these other companies. Just because people make claims against one of these listed companies or trusts, does not mean that they're going to pay them.

Here we say, I believe, 46 percent are zeros. So yes, there are a lot of claims. In asbestos there are always a lot

of claims. Garlock set itself up in a quite interesting way to organize a process to evaluate those claims. Just because they're filed, did not mean -- and we're forecasting -- will not mean in the future that all of them will get paid. Half of them won't get paid more or less.

Q. Okay. But there are a lot of -- and a substantial number of these claimants who bring claims against Garlock will be paid by these trusts, correct?

A. I do not know that.

Q. But you know that, I mean, just simple mathematical principles would tell you that that would be true, right?

MR. GUY: Objection.

THE WITNESS: I don't -- you'll have to do better than simple mathematical principle. I do not know that.

BY MR. CASSADA:

Q. But you're the estimator for the futures rep for a substantial number of these cases, and you have the data. You know how many --

THE COURT: If you want to spend your remaining minutes arguing with her, go ahead. But if you got some questions, that would be more productive.

BY MR. CASSADA:

Q. So we've established in this case you have no opinion on the average number of responsible parties in a case against Garlock, correct?

A. I do not.
Q. Okay. And given the nature of Garlock's product and the nature of occupations, does it strike you as a reasonable -- reasonable that Garlock might expect to share liability with 22 of these trusts as predicted by Dr. Bates?
A. I do not know.
Q. You got no basis to dispute that, correct?
A. Well, I don't think --
THE COURT: She said she didn't know. I think that's sufficient.
MR. CASSADA: Okay.
Q. Do you really think that it's reasonable that if Garlock was taken to trial by claimants, that Garlock would be expected to receive half of the liability in every case?
A. I'm not a jury. I'm not a judge, and I'm not going to speculate about what will happen in particular cases.
I'm probably -- of most of the people sitting in this room today, the individual cases are not my problems. I'm not a plaintiff's lawyer. I've never brought a case to trial. I can't tell you what will happen in those cases.
Q. So it's not your opinion, then, that if Garlock went to trial, that it would be expected to be found liable with just one other or two other defendants in the case?
A. Again, I can't -- I'm not well-equipped to predict trial outcomes. I'm not a lawyer.

Q. Okay. Let me ask you a few simple short questions and try to wrap this up. Just to be clear, you've not attempted to measure in your estimation opinion the number of persons whose mesothelioma was caused by Garlock's product, correct?
A. Caused. I am not a epidemiologist or a medical doctor, so I am not making a decision on medical causation.
Q. And you've not analyzed the total damages that mesothelioma claimants might recover in cases against Garlock, correct?
A. I don't have data about all these other parties, and therefore I have not.
Q. You haven't formed an opinion as to the total number of responsible parties in a typical mesothelioma case, correct?
A. I have not.
Q. Nor have you attempted to determine the total number of responsible parties in a case where Garlock might be found liable, correct?
A. I don't believe it's possible to do that, given the current status of information sharing. I've tried to generate information sharing in a number of past circumstances, but it hasn't happened. So I don't see how I could answer that question without that kind of information sharing.
Q. You also have no opinion on the typical claimant's likelihood of succeeding in a case tried against Garlock, do you?

A. I'm not a trial lawyer.
Q. Okay.
A. So how could I have that opinion responsibly?
Q. Nor as I understand it do you have an opinion on the aggregate amount of money that a typical mesothelioma claimant against Garlock will recover from trust, correct?
A. Again, look at the list that you have up. Do I have information about all of those and the recoveries the claimants are getting? No, I do not. I don't see how I could do it without that information.
Q. And your opinions in this case are based on your belief that asbestos litigation is an industry, correct?
A. Yes.
Q. And therefore, that the claims follow the profit motives of the persons involved in the industry?
A. Well, I'm comparing -- you have put up several times -- popped up here -- the law and economics model for thinking about this industry in terms of individual plaintiffs and lawyers and their individual negotiation. I do not believe that that is a good characterization of how this industry operates. It has a number of players and I've tried to expand the list, who are all operating simultaneously, and their actions and interactions in this market for claim resolution are not individual actions. These are not individual cases. Occasionally a case will go to trial as an individual case.

As I indicated my experience is that the general counsels take those cases up because they're trying to change the law and they think they have a fact situation. But when they're finished -- let's assume for the moment that they succeed in changing the law, then what they want to do is increase their bargaining power with the plaintiff's law firm, in this industry, so that they can convince large groups of plaintiffs' lawyers that it no longer pays to make the argument that they are making, and will somewhat reduce the cost of their settlements.

This is not a case in which an individual claimant or plaintiff and his lawyer, an individual defendant and his lawyer are negotiating individual cases in isolation from this gigantic situation in which asbestos is actually conducted.

We could go further. We could say in this industry there are different kinds of participants on the plaintiff's side. There are firms that only try cases. You had Mr. McClain here. Kazan McClain is a firm that takes a very small number of cases and tries an awful lot of them. There are firms that never try cases. They're completely different and they operate in completely different ways. And there are some firms that are intermediate.

So there's a differentiated group of players on the plaintiff's side. There's the property casualty insurers. There's the parents and the debtors. Not everybody is set up

that way. Some of these companies are simply adjudicating their own responsibility.

Dr. Peterson was saying there are peripheral defendants and central defendants. I mean, the interaction among all of these players is not a matter of individuals bringing cases in the traditional Chicago-style law and economics mode. These are not individuals. This is an industry operating a mass tort. It's very different.

Q. So when the one product leaves the system, the means of production in the industry shifts to other products, correct?

A. Well, the products are all out there already. So it's not that someone is going to produce, I would imagine, a new asbestos product. I think everybody knows that would be a really bad idea.

But there's continuing investigation of products where some have gone to trusts, others have not, and the interaction among these pieces continues.

But all I'm saying is, these are not -- this business about thinking about these as individual cases is not an orientation I share.

The Chicago school may have a long and distinguished and important theoretical history, but that's not what's happening here.

Q. When you described this industry to me in June, you were talking about how the focus of the means of production in the

industry changed based on where the profits could be obtained. So the means of production shifted from one product to another when the product disappeared?

MR. GUY: Your Honor, asked and answered.

THE COURT: Go ahead. Let's wind this up.

MR. GUY: They're 10 minutes over their agreement.

THE COURT: We'll stop in a minute.

THE WITNESS: I don't think I used the term, "means of production" so you'll have to show it to me.

BY MR. CASSADA:

Q. You talked about market share either --

A. I think I said market share, not means of production.

Q. Okay.

A. But that's the reason you have to show it to me.

Q. Okay. Let me show you your testimony and then we'll just have a couple of questions to wrap this up. Thank you. You were focused on market share when you gave this explanation.

(Deposition playing.)

MR. GUY: Your Honor, this is just -- Mr. Cassada will go on, and on, and on, and will not stop.

THE COURT: Okay. Sit down. Finish this up.

(Deposition was playing while counsel were talking.)

BY MR. CASSADA:

Q. So Dr. Rabinovitz, before Garlock's bankruptcy case, then Garlock was the focus of the means of production. It was

targeted, is that -- is that your correct -- that's why it was getting a market share that was 94 percent of the six months before the bankruptcy case?

A. It isn't -- there are other solvent defendants getting similarly high volumes of cases. The interest is not in the volumes which are received, but the volumes which are paid. What I'm saying here is, Garlock only historically paid about half of the cases that it received.

Because of the way this market functions, it's not surprising that the plaintiff's bar is going to file against lots of companies, very large numbers of cases. Then the company is going to develop a way of handling those. And we've been told that for this company, there's a driver case. And I assume what that means is, there's a big case and it drives both value and settlements of large numbers of other cases. Doesn't mean that all those cases are going to get paid. In the case of Garlock, half of them, if history repeats itself, are not getting paid. But that doesn't prevent the plaintiff's bar side of the equation from filing all of these -- filing volume because it gives them some leverage. And the company, by the same token, isn't forced to pay on, and historically has not paid on, about half of those cases.

So the volume is a reality at the point that it occurs, but it doesn't necessarily suggest all those cases will be

paid. The companies will then sort out the cases that they choose to settle, either in groups or the mesothelioma cases some of them one by one, and pay the portion for which they think they want to make settlement.

Q. Now that Garlock is in bankruptcy then, would it be true that the means of production have focused elsewhere?

MR. GUY: Objection, Your Honor. He keeps on misstating the testimony to try to get some --

THE COURT: Sustained. Let's knock this off.

MR. CASSADA: Yeah. Let me ask one question --

THE COURT: One question and we're out.

BY MR. CASSADA:

Q. And then I'll -- is it -- would it be true under your view that no amount that Garlock pays under the plan will decrease amounts that claimants can collect from defendants in the tort system?

A. Say that again? I didn't --

Q. Is it true that the amounts that -- any amount that Garlock pays under the plan will not decrease the amounts that claimants can collect from defendants in the tort system?

A. I don't know.

MR. CASSADA: Your Honor, I have to cut my examination short in deference to the Court's instruction.

THE COURT: That's fine. We'll take a break until 11:30. You may step down.

THE WITNESS: Thank you.

MR. CASSADA: Your Honor, I do have some exhibits I want to introduce. I can do that after the break.

MR. GUY: Your Honor, is it clear that we're going on the Debtors now for the rest of the day so we can allow Dr. Rabinovitz to go home.

THE COURT: Yes. Thank you.

MR. GUY: Thank you.

(A brief recess was taken in the proceedings at 11:19 a.m.; court resumed at 11:29 a.m.)

THE COURT: Tag, you're it.

MR. SCHACHTER: Well, if that's the case, I tag Dr. Elizabeth L. Anderson, please.

ELIZABETH L. ANDERSON,

Being first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. SCHACHTER:

Q. Dr. Anderson, would you please introduce yourself to the Court?

A. Yes. I am Elizabeth Anderson. I am currently Group Vice President and Principal Scientist at Exponent, which is a public services company.

Q. You might want to move that microphone a little closer.

A. Certainly.

Q. Yeah, that will help.

A. All right.
Q. Thank you. You have a Ph.D in what field, ma'am?
A. My Ph.D is in organic -- mechanistic organic chemistry, which is the chemistry of designing molecules to make them effective such as for pharmaceuticals.
Q. And you're a fellow of ATS, what is that?
A. That's the Academy of Toxicological Sciences. I have a certification in toxicology.
Q. In briefest summary, what has been the focus of your career?
A. My career has been focused on evaluating exposures, and the likelihood of those exposures from whatever source, the environment, from foods, occasional pharmaceuticals, to impact public health. And I have been instrumental in effecting and establishing methodology of risk assessment as a process for making these evaluations.
Q. We've called you here on the rebuttal part of this case, and I know you've done a lot of work and prepared reports, but I want to focus solely on two issues during your direct examination today.
The first is a question that has arisen based on Dr. Rabinovitz's claims about the WR Grace Zonolite attic insulation case. Do you have information about that?
A. Yes, I do.
Q. And the second is an accurate understanding of the public

health risk assessment literature discussed in both the Grace case and alluded to by a number of committee experts in the past weeks.

Do you have information, and can you help us understand that literature?

A. Yes, I certainly can.

Q. Briefly your education is, what, ma'am?

A. My Ph.D is in mechanistic organic chemistry. I began my career at the College of William and Mary as a premedical student with equal training in biology and chemistry, chose chemistry eventually as a major. And I attended University of Virginia for my Master's degree in mechanistic organic chemistry.

Q. You had a long career with the EPA. Could you describe some of the more significant things you did while you were at EPA and some of the more significant positions you held there?

A. Yes, I'll be glad to do that. At EPA in the early years we were challenged, because there was a perception that carcinogens were a particular force and that there was an epidemic of cancer caused by environmental exposures. There was a great deal of focus, I was asked to be responsible for developing the agency's cancer policy. I directed the development of the first guidelines for risk assessment in EPA.

Subsequently those were published in the Journal of

National Cancer Institute, I'm a co-author, as well as in the Federal Register.

I founded and directed the Carcinogen Assessment Group which implemented those guidelines, and led that group and the expanded central risk assessment activities in the EPA for the next 10 years.

And I directed, specific to this case, the first internal risk assessments in asbestos beginning in the late '70s, with the reserved mining case, and eventually the internal risk assessments for asbestos until we developed, in 1986, risk assessment document which was published shortly after I left.

Q. Have you been involved in co-authoring risk assessments over the years?

A. Yes, I have. I co-authored hundreds of EPA's risk assessments on every toxicant, and I have continued work in this field since then.

Q. You mentioned that you were involved in some early efforts to systematize how risk analysis was done by regulatory agencies. Is there a particular document that has become important to that process, and can you describe your participation with that document?

A. Yes. EPA was a pioneer in this field. And it became so important and central to all of the federal agencies, that the National Academy of Sciences was asked to review this methodology and to either endorse, or to criticize what was

being done.

By the time this committee was convened in 1983, I had co-authored about 150 risk assessments at EPA. This document is considered the benchmark in risk assessment and is referred to as such. It was published -- I was an adviser to this committee, I was still at EPA, and it established and endorsed the paradigm that mimics what we were doing at EPA, but codifies in a full-step paradigm that's regularly accepted today.

Q. You left EPA in 1985 or '86; is that correct?

A. Yes, I actually left early in '86.

Q. And since then, have you continued in your career to focus on issues of risk assessment, and be involved internationally, in that subject?

A. Yes, I have.

Q. Could you describe that?

A. I was a founding member of the Society of Risk Analysis, which is today the leading society -- professional society in the field. And it includes scientists in health sciences, engineering sciences, public -- social studies, public perceptions of risk.

I subsequently was president of the society, then I served as editor in chief of the flagship journal of the society, which is the leading journal internationally on topics in risk analysis for 10 years. This journal at the

time I left had a worldwide circulation of more than 4,000 subscribers, circulated in 80 countries. And the editorial board and the authors included scientists in all areas from academic communities, governmental communities, private sector. And it's one of the highest ranking peer-reviewed journals as measured by its impact factors.

Q. Have you been published in the peer-reviewed literature on risk assessment?

A. Yes, I have. I have published over many years, many articles in risk analysis.

Q. And have you lectured worldwide on issues of risk analysis, public policy and the application of risk analysis to public policy?

A. Yes, I have. I have lectured in -- as my resume describes, in virtually every major university in the United States. I have been invited abroad to lecture on risk analysis on public health issues and risk assessment by the Pan American Health Organization, by European groups including the World Health Organization. I've served on committees for the World Health Organization. I've been invited to speak in developing countries, Southeast Asia countries on these topics as well.

Q. Since you left the EPA, you've been involved in private consulting; is that correct?

A. I have.

Q. Have you maintained your associations with these public health agencies, served as a contractor to them, or an adviser on committees for them?

A. Yes, I have.

MR. SCHACHTER: Your Honor, I tender Dr. Anderson as an expert in toxicology, risk analysis, and the application of risk analysis to public health issues.

MR. FINCH: No objection with that limitation, Your Honor.

THE COURT: Okay. All right. She will be so accepted.

BY MR. SCHACHTER:

Q. On Friday, Dr. Rabinovitz testified, and this is the first subject I wanted to deal with. At page 4155 of her -- of the testimony, she was asked about the Grace opinion, the Zonolite opinion in Grace. And she was asked whether she remembered it. She said she did. And she was asked what the -- on Direct, was she aware of the Court's ruling.

And she said that the Court found that Zonolite did not cause the kinds of asbestos-related diseases that we are talking about here, unless it was disturbed.

Counsel for the future claims representative asked her, so the key issue was whether it was disturbed or not?

And she answered, yes.

Do you have personal knowledge from your participation in

that case about what the issues were that were being addressed?

MR. FINCH: Objection. Hearsay.

THE WITNESS: Yes, I am.

MR. FINCH: Objection; hearsay. It's not in her report. There's not one word in her expert report or her rebuttal report about the Zonolite attic insulation issue. What she knows about that issue she's learned in her capacity as an expert in the WR Grace case, so it's hearsay. You can't ask her from personal knowledge because she learned about it from reading documents. Number one, it's hearsay. Number two, it's not in either one of her reports.

THE COURT: Overruled. We'll let him go ahead.

BY MR. SCHACHTER:

Q. What was your role --

THE COURT: Mr. Guy?

MR. GUY: Excuse me. Your Honor, I would join the objection. And I think the best evidence of what the judge ruled in that case is the judge's ruling.

THE COURT: Fine. We'll let her testify to that. Go ahead.

BY MR. SCHACHTER:

Q. Ma'am, what was your role in that case?

A. I was a expert witness, and I investigated the exposures associated with the ZAI attic insulation.

Q. And ZAI was what was referred to in that litigation as Zonolite attic insulation?
A. That's correct.
Q. There is mention in the opinion about you, what is that mention?
A. Yes, in the opinion Judge Fitzgerald writes "Grace retained four experts to evaluate the risk of exposure to ZAI when it's disturbed in an attic through cleaning, renovation, storage or removal activities".
Q. And were you one of those experts?
A. Yes, I am.
Q. And you were evaluating it not when it was undisturbed, but when it was disturbed?
A. Absolutely. That was the central issue in the case. When attic insulation is disturbed, either by the residents or by the contractors, what is the exposure, and does it pose an unacceptable or a hazardous risk in any way.
And so what we did was to investigate all kinds of disturbance activities that could occur. And there's a broad array of those activities that I discussed in this case.
Q. And you prepared a report on that and submitted that report in conjunction with that case; is that correct?
A. Yes, I did.
Q. Did the Court, based on your understanding, accept your report and rely upon it?

A. Yes. And there's a quote here that endorses that "the Court accepts Dr. Anderson's analysis and findings which substantiate the claimants are not exposed to greater health risk from ZAI than otherwise, and that ZAI poses no unreasonable risk of harm, sufficient to support claims for property damage. Dr. Anderson's methodology is clearly articulated and is capable of repetition and peer review".

Q. Now that methodology that you used to disturb -- to evaluate disturbed attic insulation, was that in fact as you went back, actually reflected in the Court's holding that the Court was dealing, not with undisturbed, but with disturbed attic insulation?

A. Yes, the Court emphasized that. The quote here "The Court will enter an Order specifying that there is no dispute regarding the fact that ZAI is contaminated with asbestos and can release asbestos fibers when disturbed during foreseeable homeowner activities. However, the contamination and release adduced from the evidence in this case, do not establish an unreasonable risk of harm from ZAI home insulation".

Q. Thank you. I would like to turn to the second of the two discrete subjects we're going to talk about on your Direct, that's also something that was discussed in Grace.

Is there, in your scientific understanding, a distinction between how regulatory agencies approach issues of potential causation, and how that differs from how the courts do it?

MR. FINCH: Objection, Your Honor. This is clearly a -- asking her for a quasi legal opinion. How courts analyze causation is beyond her field of expertise.

MR. SCHACHTER: She has been called as an expert witness in these cases.

THE COURT: Overruled. We'll allow her to testify about her understanding.

BY MR. SCHACHTER:

Q. What is your understanding of the distinction?

A. Well, my understanding of this is well expressed here, and I'll talk about this further. But in the Zonolite attic insulation opinion, there's a very clear statement that parallels my understanding.

"The distinction between avoidance of risk through regulation and compensation for injuries after the fact is a fundamental one. In the former, risk assessments may lead to control of a toxic substance even though the probability of harm to any individual is small, and the studies necessary to assess the risk are incomplete; society as a whole is willing to pay the price as a matter of policy. In the latter, a far higher probability greater than 50 percent is required since the law believes it unfair to require an individual to pay for another's tragedy, unless it is shown that it is more likely than not that he caused it."

MR. FINCH: Objection; hearsay; move to strike.

THE COURT: Overruled.

BY MR. SCHACHTER:

Q. In terms of scientific methodology, is there a difference between -- can you describe to us the methodology that public health agencies use? We've heard some -- let me withdraw that question.

We've heard about a precautionary principle, what is that?

A. A precautionary principle is one that seeks to bias judgments in favor of public health protection. For example, public health agencies that are charged with preempting disease, protecting the public, will employ a precautionary principle to carry out their mandates to regulate in areas far, far below where there's any observed real incidence of harm.

Q. Do we see that in the public health agency's documentation of their process itself?

A. Yes, we do.

Q. Do you have an example?

A. Yes, I do.

Q. What is this?

A. This is an example in the preamble to the Occupational Safety and Health Administration's document that establishes worker protective levels. And here OSHA states "The agency is free to use conservative assumptions in interpreting the data

with respect to carcinogens, risking error on the side of overprotection, rather than under protection."

Q. And that is from the preamble for what regulations, ma'am?

A. Establishing the worker protection level for permissible exposure limits.

Q. Is there another example you'd like to share with us on how the precautionary principle is reflected in documents from these agencies?

A. Yes. We can see this in the next example. These are the EPA's 1986 Risk Assessment Guidelines that followed the ones I co-authored in 1976. I was responsible for this entire process, and they were published shortly after I left the agency.

And here what we acknowledge, and we had an expert committee working with us, that the idea of using the linearized multistage procedure, that is a low-dose model, means that we are placing a plausible upper bound on the risk and the true value of the risk is unknown and may be as low as zero.

Q. There's a statement here, right before the yellow part, "Such an estimate, however, does not necessarily give a realistic prediction of risk".

A. That's correct. And in this zone of inference, where we don't have scientific data, we infer, we use policy judgments,

and we speak of these risks as plausible upper bound or theoretical risks. Certainly they're not regulating where there are real risk or observed incidence, because we would not be in a protected mode if we were doing that.

Q. You have one other example; is that correct?

A. Yes.

Q. And what is that, ma'am?

A. Well, this comes from the 1986 Asbestos Health Assessment document. And even in this document which was produced under my direction, and Dr. Nicholson was the contractor who helped us with this document, there is acknowledgment that the dose response curve that was eventually adopted by EPA and is still in the EPA online database, the statement is that pure chrysotile exposure -- this curve will likely overestimate circumstances where there is pure chrysotile exposure.

Q. Now you mentioned involvement in the promulgation of how risk assessment is done in the "Red Book". Does the "Red Book" set out a procedure, a methodology for assessing these issues?

A. Yes, it does. I spoke earlier of the paradigm, this comes from the pages of this document. And the four steps of this paradigm are widely, widely applied today.

Q. And is there a document, a diagram that is widely accepted to reflect how these four steps are employed?

A. Yes, I have a diagram that I think can help us with this.

Q. Okay. Can you talk us through this diagram, ma'am, and explain the process by which these assessments are done, and to the extent that there is distinction between how that's done for public health purposes as for other purposes, let us know what it is.

A. Yes. In the first step, the hazard evaluation. What is done is the strength of signal that an agent is capable or has the propensity to cause disease is discussed. And I think specific to -- and it also applies to establishing general causation. And I think specific to what we're discussing here, a public health agency while recognizing differences in fiber types might choose to regulate them all the same in the interest of the precautionary principle public health protection.

While if we're speaking of general causation, we are obligated to look at all the scientific evidence that might inform us of the differences in propensity to cause disease amongst fiber types.

Q. Does the precautionary principle you described to us, is it employed by these public health agencies at this first stage?

A. Yes, it is.

Q. All right. The second stage has dose response and exposure assessment. Do you have a slide that sort of deals with dose response that you can explain that for us?

A. Yes. And I meant to add on hazard evaluation, there is something in common.
Q. Yes, ma'am.
A. Case reports are not used, either by public health agency or -- in establishing causation in this first case.
Q. Okay.
A. Dose response is the next step in the process, because every agent is capable of inducing an effect at a high enough exposure level. So what is important here, is to understand what we know about the levels of which an agency can induce incidence of health harm, and then to, for public health agencies, find a means to extrapolate outside of that scientifically-observed zone, to regulate in a zone of inference where policy judgment supercedes science because we don't have the solid scientific evidence.
Q. Do you have a slide that demonstrates that, ma'am?
A. Yes, I do.
Q. Okay. And in this slide you have an observed range. What is that -- first of all, explain the axis and what this is supposed to explain.
A. What I'm speaking of here is the cancer risk on the vertical axis, the X axis is the actual either cancer risk or the actual incidents in the observed range. And on the Y axis the exposure or dose, and here, relevant to asbestos, it's expressed in fibers per cc year. This observed range is where

we have actual evidence. We have actual evidence of harm. And we must extrapolate from the incidence that we know about at certain exposure levels, down to what I call an unobserved range by using convention.

Q. What is that convention, ma'am?

A. What public health agencies have agreed to do is to use a linear non-threshold model. This is used for all carcinogens. In the EPA's online database there are more than 90 of these, so not just asbestos, to establish a plausible upper bound on the risk, meaning that we don't have scientific information. So we are, in this zone being protective of public health, precautionary principle, and establishing protective health guidance or regulatory levels in the interest of public health protection. And we call this an inferred risk or theoretical risk zone. Where the real risk might be considerably less. As I said before in the '86 guidelines, these other curves describe other possible dose-response curves that we could infer, but in the interest of public health protection we choose the upper one. Because unless we know the mode of action, we have decided not to do otherwise, and that is explicit in the EPA's current guidelines that were published in 2005.

Q. We heard earlier in this case OSHA projections of cases occurring at very low exposures under the current OSHA limits. Is that or is that not based upon these extrapolations under

the no threshold model?
A. Yes, I mean, very frequently we will -- public health agencies, OSHA, EPA, will speak of an increasing risk in the zone, meaning theoretical risk, as an increase in risk with every exposure because we've already set up that guideline, that inferred judgment that the linear non-threshold model will guide the inferred risk zone.
So we will often see that there is a theoretical risk that's increasing if you set a standard somewhat higher or somewhat lower in this zone. So that's what's meant by that.
Q. Thank you. Now returning to our diagram on exposure assessment. Is there a scientifically viable way -- methodology how that's done?
A. Yes, yes, there is. Since the 1900s, Haber's Rule going forward, the concept of using the essential information of concentration frequency and duration of exposure, is the accepted way to make judgments about exposure, both for public health protective purposes and for establishing causation.
Q. Can a viable methodology for determining the danger of any substance or product, not take into account exposure frequency and duration, and be based solely on concentration?
A. No. If we have only concentration, we have only a piece of information that cannot be employed in any methodology that I know of, to infer either a public health protective decision, or inform a public health protective decision, or to

inform a scientifically based decision concerning causation.
Q. To complete our diagram, excuse me -- I went the wrong way. Last is risk characterization. Can you explain that step and what it involves, ma'am?
A. Yes, it's very important in risk characterization to know what question you're trying to answer. So the first question I hear is characterizing the risk to answer the question of causation; are exposures sufficient to really cause disease? And then go back and assemble all of your information to inform that question.

The second question is, how can we set public health protective levels to be sure we preempt and prevent disease? When we ask that question, we go back again and assemble the correct information and evidence from each of the prior steps.
Q. Now we have heard cited in this case a number of regulatory documents and agencies and statements that they may have made about low-dose exposure or whether there is or isn't a threshold. Do you have from personal experience, involvement in many of the agencies that we're going to talk about here for just a minute or two?
A. Yes, I have.
Q. And let's take for example, ATSDR. Have you attempted to find what their mission statement is? Whether they're employing this protective principle?
A. Yes, I know ATSDR very well. I was involved in -- when

the agency was created, I was the interface committee to decide how ATSDR and EPA would operate together. And their mission is clear, to promote health, safety -- healthy and safe environments, and prevent harmful exposures. And after I left EPA, I directed and produced their health profiles for 10 years.

Q. I'm going to ask for this for each of the agencies we're going to discuss and I'm going to try to ask it once as an efficiency mechanism.

Does this agency employ the precautionary principle in its scientific evaluations of the literature, as it prepares its public statements, recommendations, and if it does so, its regulations?

A. Yes, it does.

Q. You obviously worked for EPA, and does it have a public health purpose?

A. Absolutely.

Q. And does it employ the same methodology?

A. And it does.

Q. You're familiar with -- how are you familiar with the National Toxicology Program?

A. I've worked directly with the National Toxicology Program. I collaborated when I was in EPA with NIH as a component in their bioassay studies. And I have reviewed some of their reports to Congress on carcinogens. They have the

same mission to prevent disease due to human exposures.
Q. And do they use the same precautionary principle in their analysis?
A. Yes, they do.
Q. The National Cancer Institute, have you worked with that agency throughout the years?
A. Yes, I was ex-officio member on their science advisory board when I was at EPA, and their mission is much the same, diagnosis, prevention, related to cancer.
Q. And is their methodology to use the precautionary principle?
A. Yes.
Q. OSHA. We've been through OSHA. Is their mission to use the precautionary principle and do they do so?
A. Yes, they do.
Q. Is it -- okay --
A. They are to prevent -- protect worker health and prevent disease.
Q. Do you have personal knowledge how NIOSH operates from your participation with them?
A. Yes, NIOSH basically advises OSHA, and they have the same mission and employ the same approaches.
Q. They don't make regulations, but do they employ the precautionary principle in their scientific evaluation of the literature and in their public statements and recommendations?

A. Yes, they do.
Q. ACGIH, you're familiar with that agency. Would the answer be the same for that agency?
A. Yes, I am familiar with them, and they have the same mission, to advance occupational and environmental health.
Q. CPSC, what is that and do you have knowledge of whether they use this precautionary principle?
A. Yes. They are the Consumer Products Safety Commission. They are charged with protecting the public from unreasonable risk of injury or death, and they employ the same precautionary principles. And we had another agency regulatory liaison group in 1979, and we basically tried to codify all of our approaches and guidelines and CPSC was a member of that.
Q. Does their analysis follow the precautionary principle as we discussed?
A. Yes, it does.
Q. ATS, what is that, and do you have knowledge of it?
A. The American Thoracic Society, and they are certainly involved in public health protection and information to improve health worldwide.
Q. Based upon your understanding, do they employ the precautionary principle in their evaluations --
A. Yes, they do.
Q. -- public statements, et cetera? Is the answer, yes?

A. Yes, they do.
Q. I'm sorry.
A. Sorry.
Q. The American Cancer Society, is the same true for that agency?
A. Yes, the American Cancer Society is very much involved with preventing cancer and saving lives is part of their mission.
Q. We've heard about the British Thoracic Society, have you researched what they say their mission is?
A. Yes, and it's very similar, preservation, protection of public health.
Q. World Health Organization, does it have a similar mission?
A. Yes, it does. And I have served directly on their committees. They are oriented very much the same way, policy-based options to protect public health.
Q. IARC. What is IARC, and do they employ the same methodology?
A. Yes, IARC is the International Agency for Research on Cancer. It's an arm of the World Health Organization, and again, is engaged in cancer prevention and control.
Q. Do they employ the precautionary principle in its -- it's an "it", not a "they" -- scientific evaluation of the literature --

A. Yes, they do.
Q. -- as it prepares its public statements and recommendations?
A. Yes, they do.
Q. World Trade Organization's a little different. We heard a little about that. Could you briefly explain its role, very briefly?
A. All right. The World Trade Organization is an organization to promote trade amongst countries. And when it comes to trade barriers -- and I was directly involved in a panel to discuss this -- what they have decided to do is if a country throws up a trade barrier involving products that are sanitary -- vital sanitary products, then there is a decision that the risk assessment should be performed to determine whether the barrier is a real barrier to prevent risk, or whether it is a barrier to preserve a barrier to trade.

And in the underpinnings of the risk assessment work that's done, the same principles from the public health agencies have been employed. The actual panel that reviews those risk assessments are not scientific panels.
Q. I believe we looked up a panel that was cited -- let's go on.

So you've gone through these agencies. We heard about some others including the Helsinki -- or a document, the Helsinki criteria document. Have you reviewed that and are

you aware of whether it includes a public health protective aspect in its analysis?

A. Yes, it does, among other things, a panel of 19 people who were invited. But yes, yes, it does.

Q. And we've also heard regulations from the Mine Safety Health Administration, is that what MSHA is?

A. Yes, that's correct, and the Mining Safety and Health Administration is applying the same risk assessment principles that OSHA uses.

Q. And in fact, do they explicitly state that they're using the OSHA risk assessment?

A. That's correct.

Q. Now in that study there's been some discussion in this case that they conducted a new review. Were you able from reviewing the regulations that were cited, to determine what kinds of populations they were reviewing?

A. You'll see here that all of the studies that they have listed are studies of miners and millers.

Q. Does it appear that they were trying to make a new end-user analysis from these regulations?

A. No, no, that's not what they were doing, absolutely not.

Q. I would like to conclude with just a methodological issue.

In determining whether a product is or isn't a danger, is it proper to focus only on episodic concentrations without

accounting for exposure frequency and duration?
A. No, as I said, this principle has been a principle for a very long time since the 1900s. It is not, because only a piece of information about some episodic exposure is only that, it's a piece of information that cannot be used in any methodology that I know of, or have ever found, to inform either a public health agency about how to deal with very low-level exposures and protect public health, or to answer the very separate and different question of causation.

All three of these factors must be a part of this assessment to come to cumulative exposure which is something that we can use, and in fact becomes a very essential piece of information as a part of a method to reach conclusions about either public health protection or answer the separate question about causation.

MR. SCHACHTER: Thank you, Dr. Anderson.

Your Honor, I would like to offer Garlock Exhibit GST 15143a, which is the CV of Dr. Anderson.

THE COURT: All right.

MR. FINCH: No objection as long as that is being offered for Rule 104 purposes.

(Debtors' Exhibit No. 15143a was received into evidence and published.)

MR. SCHACHTER: And we offer the other material, the slides and the report.

THE COURT: Okay.

(Debtors' Exhibit No. 16008 was received into evidence.)

MR. SCHACHTER: Was I surgical, Your Honor?

THE COURT: Yes.

CROSS-EXAMINATION

BY MR. FINCH:

Q. Good afternoon, Ms. Anderson.

A. Good afternoon.

Q. My name is Nate Finch. I represent the Asbestos Claimants Committee. We've met before in WR Grace case, have we, ma'am?

A. I think we have.

Q. Can you speak up?

A. I said I think we have.

Q. You're currently employed by Exponent, correct?

A. That's right.

Q. And you used to be the president of a company called Sciences International?

A. That's right.

Q. I want to talk to you about three things today. I want to talk about bias, your qualifications, and your opinions, okay? Is that a yes?

A. Well, yes, I mean, I don't know that I have to agree, but that's fine.

Q. You're charging $475 an hour for your work in this case?
A. I'm not charging that, Exponent is.
Q. Exponent is being paid by Garlock $475 per hour for your work in this case, correct, ma'am?
A. That's correct.
Q. And Garlock has paid Exponent over $350,000 up through the time of your deposition for your work in this case alone, correct?
A. That's correct.
Q. And those are the breakdowns of the invoices that you submitted, that's only through June, right, ma'am?
A. I have not, if you represent that that's correct, that's fine. I don't have those invoices with me.
Q. Okay. Now, you did two reports in this case, correct, ma'am? Your initial report, which is where you were commenting on statements in the Asbestos Claimants Committee's brief?
A. That's correct.
Q. And that was 29 pages long, right?
A. That's right.
Q. And then you did a rebuttal report which was in response to the -- some of the statements in the report of Dr. Welch and Dr. Brodkin and Dr. Brody, correct?
A. That's correct.
Q. That was about 25 pages long, right?

A. That's right.
Q. In much of this report -- in both of your reports you are just quoting things that the EPA or the EPA -- or the various agencies you showed on your slides, you're just quoting what their missions are. You had someone pull that out and quote it, right?
A. I did. And I did that for a reason. I did that because Dr. Welch had used as her part of her foundations for her statements that she -- one part of her report mentioned ATSDR said something, and that all these other agencies agreed with ATSDR. And she was quoting only a part of what ATSDR had said. So I thought it important to point out what these agencies are and what they do.
Q. Okay. And so you have a total of about 50 pages of reports, and you billed Garlock $350,000. That's over $6,000 per page, for every page you and the people of Exponent have written in this case; isn't that right?
A. I don't believe that my research on this topic can be broken down by a charge per page. I think that's what you have done.
Q. You don't dispute my math, do you, ma'am?
A. Well, I do dispute that this has any validity, because when I have travel down here, I have traveled with boxes of backup references and materials that I have reviewed in this case. And these legal boxes that we see everybody carry

around, I have a file of references that I've reviewed that fill two of these boxes completely. So I don't think that what I've charged should be broken down by page.

Q. Okay. Well, you've never appeared at a deposition or a trial on behalf of a plaintiff in an asbestos case; isn't that true, ma'am?

A. I think that is true.

Q. And you or Exponent have worked repeatedly for asbestos defendants. You worked for WR Grace as we saw earlier this morning, correct?

A. Yes, I have.

Q. You and people at Exponent have worked for General Motors and Ford in connection with litigation over exposures to asbestos from brakes, right?

A. I worked on only one brief Ford case. I never worked for GM. I haven't worked for Honeywell on asbestos issues, nor Union Carbide. I have worked for Garlock.

Q. Well, you know that people at Exponent have worked for Ford and General Motors on asbestos cases, right? And in fact, you testified in a trial called Granier, where General Motors was the last remaining defendant, didn't you, ma'am?

A. I didn't understand your question.

Q. You testified in a Granier case where General Motors was a defendant in a case that Rick Nemeroff was the plaintiff's lawyer and you testified for General Motors,

correct?
A. I only testified in one case, and if General Motors was a co-defendant, I have forgotten. I don't remember.
Q. And you know that Suresh Moolgavkar oftentimes appears as -- he works for Exponent, right?
A. Yes, he does.
Q. And he has testified in cases involving Ford and Union Carbide, correct?
A. That's right.
Q. And he has --
A. I mean -- I don't -- wait a minute. I don't know exactly what cases he's testified in. I know that Dr. Moolgavkar is an international expert in asbestos and I know he's testified. I'm not prepared to say in which cases he's testified.
Q. Okay. And you would agree that you and your company have been a consultant to big tobacco corporations, right, ma'am?
A. That's not correct.
Q. Well, isn't it true that you -- when you were at Sciences International you wrote and received funding from something called the Center for Indoor Air Research, Workplace to Preform two ETS-related studies. This was in connection with -- this was a letter you sent to Sciences International in 1998, and it was to the Center for Indoor Air Research. That's a letter you sent in 1998, right, ma'am?
A. Yes. If you want to bring up something that's that old.

What the Center for Indoor Air Research was, was a research center -- and as far as I knew, the primary people who made decisions for these grants, was their board. And the board was made up of the leading toxicologists and medical doctors at that time and included Mark Utell from Rochester University, Dr. Roy Albert who had chaired the Carcinogen Assessment Group, Dr. Mort Lippmann who chaired the EPA's Science Advisory Board under the Clean Air Act and continues to be on their boards.

Q. Well --

A. So this highly esteemed committee was the committee that made decisions about giving these grants. And we had one small grant once to look at indoor air issues involving environmental tobacco smoke, so that's --

Q. ETS means?

A. Environmental Tobacco Smoke.

Q. Means secondhand smoke in common stream?

A. That's right.

Q. And the Center for Indoor Air Research was, in fact, you published a paper where the funding was sponsored by the Center for Indoor Air Research, right?

A. That's right.

Q. And the Center for Indoor Air Research, the members of the center are divided into three classes, charter members, regular members or associate members. Charter members are

corporations engaged in the business of manufacturing and marketing cigarettes that produce at least 2 billion tax paid cigarettes during 1987. Each charter member may nominate two representatives to serve on the Center's board of directors. There are currently six directors representing charter members.

The document goes on saying, the Center does not have any regular members. And on the associate members, it says, the associate members of the Center may not serve on the Center's board of directors.

What you were trying to do with your research on behalf of the Center for Indoor Air Research, was to persuade people that secondhand smoke wasn't dangerous, right?

A. Wrong.

Q. Well, you wouldn't agree that the purpose of the CIAR was to generate data to resist smoking restrictions, and generate conclusions that supported the tobacco industry's position that ETS posed no proven health risk to nonsmokers; you would disagree with that?

A. I have no knowledge that that was ever their purpose. And if you think it's their purpose, those are your words and not mine.

Q. Well, you're aware that the tobacco industry was sued by the federal government of the United States of America for fraud in a trial that lasted for over a year in front of

Federal District Court Judge Gladys Kessler in Washington, D.C. You're aware of that, right, ma'am?

A. I had no involvement, and only, you know, observer status. And I have some knowledge, but I did not --

Q. This is the opinion that Judge Kessler issued, final opinion, 1,600 pages in the Federal Reporter. This is what she said about the CIAR. "The TI-ETSAG", that's the Tobacco Industry ETSAD -- SAG -- Environmental Tobacco Smoke, AG, "existed from 1984 to 1988 when its mission was transferred to the Center for Indoor Air Research or CIAR. The TI-ETSAG was made up of representatives from the cigarette manufacturer defendants' in-house counsel, outside law firm attorneys, and public relations of experts from the tobacco institute. The purpose of IT-ETSAG was to generate data to resist smoking restrictions and conclusions that supported the industry's public position that ETS posed no proven health risks to nonsmokers."

That's what Judge Kessler found was the purpose of the CIAR, the organization that founded your work.

And then, "The purpose of the TI-ETSAG was to generate data to resist smoking restrictions and conclusions that supported the industry's public position that ETS posed no proven health risk to non-smokers".

Tom Osdene. You know who Tom Osdene is, right, ma'am?

A. No, I don't.

Q. He was the head scientist at Philip Morris, you never heard of him?
A. No.
Q. Tom Osdene wrote in a letter to -- from him to the president of the tobacco industries, April 25th, 1988. "Thank you very much for your letter which I received on April 19th regarding the ETS issues. As you well know, we have been concerned with the scientific aspects of the ETS issue for some time. I think many of us have conceptualized the ETS issue as a battlefield in which the arena is dominated by public relations and legal issues, while the ammunition which is used happens to be science. It has been the purpose of CIAR as well as its precursor, the ETS advisory committee, to provide ammunition in this fight."

That's what the science director of Philip Morris was writing about the CIAR in 1988, right, ma'am?
A. Well, that has no relevance to the work that I did over 15 years ago that I co-published with people from EPA. One of my co-authors is now one of the leading scientists at EPA, and that was certainly not the purpose of what we did with a small grant, that was my understanding given to us by the esteemed committee that I mentioned to you.
Q. Well --
A. So, I don't know -- this has no relevance to anything that I know of.

Q. All right. You also did work for the RJ Reynolds Tobacco Company, correct?
A. No, that's not right.
Q. You never were asked to enter into an agreement between Science International and RJ Reynolds to work for it in the fields of toxicology and risk assessment for a period of five months from the date of the signing of this agreement?
A. Not as far as I remember.
Q. Okay. This is a letter addressed to you, right, ma'am, March 23rd, 1999?
A. That's right.
Q. And that's J. Turim. He was the Executive Vice President of your company, right, ma'am?
A. That's right.
Q. And during the agreement you agreed, "Sciences shall refrain from taking any action or conduct which is inimical or opposed to the interest of RJR. RJR shall be advised promptly of any possible conflicts of interest."
That's what your company agreed in 1999, right, ma'am?
A. I don't remember this document at all.
Q. And then you published a paper, "Worker Exposure Standard for Phosphine Gas", where one of the authors, Joel Seckar worked for RJR, right?
A. This is completely different. I can tell you all about this if you want me to.

Q. You can save that for Redirect, ma'am.

My question is, you published -- worked for, your company received funding from RJ Reynolds, right?

A. No. That is completely wrong. Phosphine gas is a fumigant that's used on most of our foods nationwide that are grains. It also happens to be used on tobacco products as well, it's used on corn and wheat, all of the food products we ship are fumigated with phosphine gas.

This was a particular question we were working for the phosphine coalition, not for RJ Reynolds. The only scientist from the phosphine coalition happened to be Ph.D toxicologist from RJ Reynolds who were assigned to work with us --

Q. Mr. Seckar, right?

A. That's correct. And the fact is, EPA had asked under their pesticide authorities -- this had nothing to do with smoking -- under their pesticide authorities, the private sector is responsible for providing technical information to the agency when they effect a data call-in.

We were asked to help the agency with a very specific kind of risk assessment issue. And that is how to interpret rat studies, that is when rats are inhaling phosphine gas, the fumigant, so that we could establish short-term protective levels for workers who were applying phosphine gas to grains nationwide.

Q. And --

A. And for bystanders and residents. We did this. And we published that work. Unfortunately, it was well after EPA had finished their regulation. So there is -- we were not working for RJ Reynolds.

Q. Well, do you deny that this contract between your company and RJ Reynolds exists?

A. I said, I have no knowledge of this, but you have the statement, I don't know what it means.

Q. You also were paid by Philip Morris to go around the world and give some presentations in third-world countries about secondhand smoke; isn't that right?

A. Not that I recall.

Q. Well, this is a letter to you in April 1998 from Philip Morris. "Dr. Anderson, I have enclosed a bibliography to address your questions about the nature of the particles and compounds present in both main stream and side stream smoke."

And then they sent to you a conference in Bangkok, Thailand, December 2nd, 1999, where the writers of the conference were saying, "I'm writing to inform you that the program of the Fourth Princess Chulabhom International Science Congress has now been finalized. The symposium on indoor air quality that Philip Morris USA will contribute to, will be held on Wednesday, the 1st of December with the following speakers. We would appreciate if Philip Morris could support the following speakers with regard to air travel and local

expenses. Dr. Elizabeth Anderson, Sciences International, Inc."

Ma'am, isn't it true that Philip Morris paid your way to go to a third-world country and talk about indoor air smoke?

A. No, that's completely wrong on two things. One, I had no idea that the Chulabhom foundation was getting some funding. They had a thousand people from developing countries attend. I did not know that they were getting some funding to support their conference.

What I talked about is what is on my resume, which is the work that we did under the small contract 15 years ago, which had nothing to do whatsoever with anything but some analytical data that compared some data for indoor air pollution with other data in different settings.

There was no defense on smoking or anything to do with smoking presented.

Q. Ma'am, isn't it true that the Surgeon General in 2006 concluded that secondhand smoke caused lung cancer in nonsmokers? Do you know that?

A. Well, I mean, I think we concluded that was a possibility when I was in EPA.

Q. Let's talk about Sciences International. Isn't it true about seven or eight years ago Sciences International when it was working for the National Institutes of Health was fired?

A. I have no idea. I had left the agency -- I left the

Sciences International.
Q. Well, Sciences International was your company, correct?
A. Sciences -- I founded Sciences International. And I left Sciences International in September of 2001 or the fall of 2001.
Q. And in 2007 the federal government fired a contractor --
MR. SCHACHTER: Objection, Your Honor. This is clearly irrelevant.
THE COURT: Sustained.
BY MR. FINCH:
Q. Let's turn to your qualifications, ma'am.
You're not a medical doctor, correct?
A. That's correct.
Q. You are not qualified to diagnose cancer, correct?
A. That's correct.
Q. You're not qualified to take a clinical history from a patient for the purposes of assessing what may have caused his or her disease?
A. That's correct.
Q. You are not an epidemiologist?
A. I'm not an epidemiologist, and I'm not a medical doctor, but I regularly use their information in risk assessments. So I'm certainly familiar with design of studies. I can certainly read studies, and I can understand what the authors are saying. But no, I do not do the statistical analysis and

I do not design the studies.
Q. Okay. So you have not designed any epidemiological study of asbestos or exposed workers, correct?
A. No, I have not.
Q. And you haven't published any epidemiological study of asbestos exposed workers in any peer-reviewed journal, correct?
A. That's right. I use the information, I'm not the investigator.
Q. You haven't done any original research on asbestos and disease -- and by that I mean, either designing an epidemiological study or designing a laboratory experiment where you do something novel and then publish it in the peer-reviewed literature, correct?
A. Well, I certainly was involved in a great deal of novel research on asbestos starting in the late '70s. And I can give you examples.
When we were involved in the reserve mining case, EPA -- I was the technical adviser on that case for the EPA. And we needed to devise methods to measure asbestos fibers in water for the first time. I was fully familiar with what we were doing to measure asbestos fibers in air, but we didn't have methodology --
Q. My question was, ma'am, you haven't done any research on asbestos as a cause of disease in terms of either designing an

epidemiological study, or in doing an animal experiment to see how either the inhalation or the injection of asbestos fibers might lead to disease, correct?

A. I was in the laboratory, you cannot really design a study if you can't measure the exposure. And I was trying to say I've been intimately involved in understanding how to measure exposure, the role of measuring the exposure, the role of understanding the frequency and duration of exposure, which is an essential component of any investigation, either in animal studies or human studies.

Q. Only two of your peer-reviewed publications even have the word "asbestos" in the title, correct, ma'am?

A. I have not looked at my resume to make that analysis.

Q. And one of them was a risk assessment for people doing -- essentially doing remediation of asbestos -- filling asbestos insulation in place, and the other was a paper where people were reviewing the mechanisms of asbestos disease causation, other people's work, correct?

A. I don't remember which two papers you're talking about. If you want to give them to me, I'll be glad to take a look at them.

Q. Well, you certainly haven't published anything about the epidemiology of asbestos-related disease ever in your career in a peer-reviewed journal, correct?

A. Ask me --

Q. The epidemiology. You have not had any of your peer-reviewed papers, none of them dealt with the epidemiology of asbestos-related diseases, correct?
A. Well, I think certainly being responsible in EPA for all of the work we did in asbestos, we were using epidemiology. We were certainly reading all of the studies. But I have not, as I said before, I'm not an epidemiologist. I would not design those studies, so I would not be a co-author on those publications.
Q. Certainly none of your -- none of the studies you have ever designed have been cited by IARC in its latest monograph on asbestos for the purposes of disease causation like Dr. Welch's paper on peritoneal mesothelioma was cited by the latest IARC publication, right?
A. There's no reason IARC should cite any particular paper. They cite worlds of literature, but there's no reason they should cite, because first of all, IARC is dealing in that first box, the hazard identification. So they're going to look at all the published epidemiology studies, all of them, not just one or two. And they are going to look at all the ancillary information.
I am not in a laboratory. I'm not an epidemiologist. I would not have designed the epidemiology studies, and I'm not in an animal laboratory. I don't do animal studies.
Q. Did you read Dr. Welch's trial testimony from this

matter, ma'am?

A. Yes, I did.

Q. So you would have seen when I asked her why she considers the views of something like the International Agency for Research on Cancer, or the United States Surgeon General, or the National Toxicology Program in forming -- in helping to form her views about whether chrysotile causes mesothelioma.

One of the reasons she said is, "they put together a panel of people who know more than anybody in the world about carcinogens, and then they focus on the particular ones they -- of the -- ones of the carcinogens that they're interested in. In this case it was asbestos, and they spent a long time reviewing all the literature and synthesizing it.

So, it's, you know, for someone like me, I couldn't do that all on my own. I don't think any one person on that committee could do all that on their own. It's so much work to synthesize all that information and that's why we have an organization like IARC. It is their job, they're part of the World Health Organization and they're not a regulatory agency. Their job is to tell the rest of us what are known human carcinogens, so that the rest of us can try to keep people from being exposed to those things."

That's what Dr. Welch testified to, right, ma'am?

MR. SCHACHTER: Objection, Your Honor. He's not cross-examining her on anything. He's just reading his

witness's testimony.
BY MR. FINCH:
Q. Well, let's talk about what IARC does. The International Agency for Research on Cancer, it assembles the key evidence, animal experiments, in vitro experiments, exposure studies, and epidemiological evidence. It evaluates the reliability of that, and it draws conclusions from the evidence. That's what they say they do, right, ma'am?
A. I know exactly what they do. I've been there. What they do is, they are in the first box of my paradigm. They don't get involved in the exposure, but they are assembling the evidence, and with their public health mission they are very protective in their decision, they use precautionary approaches, and it's consistent with their mission.
Q. Do you have IARC in front of you, ma'am, the latest monograph on asbestos?
A. No, I don't.
MR. FINCH: May I approach the witness?
THE COURT: Yes.
BY MR. FINCH:
Q. You would agree with me that the IARC monograph on asbestos that was published in 2012 is not the first time IARC has examined asbestos, correct?
A. That's correct.
Q. And in the 2012 publication, they have information about

exposure data, they have information about the chemical and physical properties of the agent, they talk about human exposure, studies of occupational exposure, mesothelioma, specifically, cancer and experimental animals, inhalation exposure, intrapleural and intraperitoneal administration, and other relevant data which includes toxicokinetics, deposition clearance and translocation in humans. You would agree with me that the IRAC document -- which is almost 80 pages long, not including the references -- goes through all those subjects, correct?

A. Yes, it does, and they do comprehensive documents. And this is not necessarily as long as some of the other agency documents, but they're comprehensive, and they do address all of these topics, and they are trying to establish what weight of evidence there is, or what strength of signal there is that various types of asbestos can cause disease.

Q. And they went through, and if you look at the references, there are over 400 references they cite at the back of the publication. These are just the pages of the references they have epidemiology studies, animal injection studies, animal inhalation studies, exposure studies, all of that information is included in the IARC document, correct?

A. Yes -- yes, it is. And they also, I should point out in their comprehensive inclusion of all articles, they also include articles such as by Berman and Crump. Where Berman

and Crump, and they quote them in this document, conclude that chrysotile may have a zero potency for causing mesothelioma or a 1/200th of a potency for mesothelioma, compared to other fibers.

So yes, they're very comprehensive. They include a lot of information. But at the end of the day, they are only trying to draw lines of evidence from studies, principally because we have so many human studies on asbestos, that there's evidence that asbestos causes human disease.

Q. And what they say is that "pleural and peritoneal mesotheliomas are reported to be associated with occupational exposures to crocidolite, amosite, and chrysotile". That's what IARC states, correct?

A. If you say that's what they said, that's fine. They also say other things.

Q. And they say, "although the causal association between mesothelioma and asbestos has been well-established, several important issues remain to be resolved that are discussed below". And then they talk about the importance of fiber type in their document, correct?

A. That's right.

Q. And they talk about the difference between the various studies in Quebec between the tremolite-contaminated mines and the nontremolite-contaminated mines, right?

A. I know they do talk about that.

Q. And they talk about the Balangero -- the North Carolina study, which the Judge has heard quite a bit about. And they talk about the Balangero, Italy study which the Judge has heard about, correct?
A. That's right. They are going to be very inclusive.
Q. All right. Now another document that is sort of a comprehensive review of the evidence, was something put together by the "International Program for Chemical Safety, Environmental Health Criteria 203 Chrysotile Asbestos", that was published in 1998. You're familiar with that document, right?
A. Yes, I am. And as I said, I've served on IPCS Committees so I'm fully aware of what they do. They are the documents that the World Health Organization publishes, and they are intended to give guidance internationally to protect public health.
MR. FINCH: May I approach the witness, Your Honor?
THE COURT: Yes.
BY MR. FINCH:
Q. Ma'am, you recognize ACC Exhibit 3052 as the document that's on the screen there, "The IPCS Chrysotile Asbestos Environmental Health Criteria 203"?
A. I'm sorry. What do you want me --
Q. It's a different cover page, but the document I've handed you is ACC 3052 is the monograph on chrysotile asbestos that

the World Health Organization sponsored in 1998, correct?
A. That's right.
Q. All right. And it lists on the first page -- I don't have it on the slides, but it lists the first draft was prepared by, and it lists a group of people that includes William Nicholson, Professor Lippmann -- I'm looking at the front page of the document itself, ma'am -- Mort Lippmann, Brook Mossman, J.C. McDonald, Philip Landrigan, and Dr. Nicholson again, and Professor Schreier. These are the people who were involved in preparing this document, right?
A. I haven't found the page, but if you say that's correct --
Q. Right on the cover, ma'am.
A. Oh, okay. I see.
Q. Correct?
A. That's correct.
Q. And Dr. Nicholson was the person who was the lead author on the EPA's 1986 risk assessment for asbestos, correct?
A. Yes, I know him very well. I worked with him as early as the late '70s. I knew him very well.
Q. And the World Health Organization document again, has 29 pages of citations, correct? The Environmental Health Criteria 103?
A. These documents are always very, very comprehensive.
Q. And they cite --

A. -- include all the literature. If you say there are 29 pages, I won't count them.
Q. And hundreds of articles, right, for citing?
A. That's right.
Q. And what they concluded is, "adverse health effects associated with occupational exposure to chrysotile are fibrosis, which is asbestosis, lung cancer and mesothelioma". That's on page 140.
A. Yes, and they also go on to say a number of other things in the document. Because again, this is a public health protective document. So they want to be informing the public health, and so they're going to be very precautionary.

But they also point out in the document that "there is evidence of fibrous tremolite causes mesothelioma in humans. But since the commercial chrysotile may contain fibrous tremolite, it has been hypothesized that the latter may contribute to the induction of mesotheliomas in some populations exposed primarily to chrysotile. The extent to which the observed excesses of mesothelioma might be attributed to the fibrous tremolite content has not been resolved".

So they are very comprehensive. But they certainly -- these are not statements related to causality. They are public health statements that are meant to be precautionary.
Q. Well, we'll get to the precautionary principle in a

minute.

But don't they conclude in the "Conclusions and Recommendations Protection of Human Health", that "Exposure to chrysotile asbestos poses increased risk for asbestosis, lung cancer and mesothelioma in dose-dependent manner. No threshold has been identified for carcinogenic risks".

That's at least what they said, right?

A. Yeah, and that's very consistent with what I have just said. When you're a public health protective mission or agency or entity, you're dealing in that low-dose zone of inference.

And so we are going to see statements like this, and they are correct statements. I was very much a part of establishing these methods. That in the low-dose zone where we don't have scientific information, we have adopted a convention that there is a dose-dependent relationship. And unless -- not only for chrysotile asbestos, for any asbestos, for any carcinogen -- unless we understand the mode of action that allows us to choose a well-defined scientifically based threshold, we assume for all probable-assessment carcinogens, that there is no threshold. This is totally consistent with what I said.

Q. And so you would agree that no threshold has been identified for the carcinogenic risk of chrysotile asbestos, correct?

A. As for most carcinogens, unless we know the mode of action when we're dealing in the inference zone, the theoretical risks are presumed to exist as a public health protective measure.
Q. Ma'am, have you, as part of your work in this case, you have not reviewed this publication, the British Journal of Cancer from last fall, estimating the asbestos-related lung cancer burden from mesothelioma mortality?
A. I know that Dr. Garabrant has dealt amply with these topics. This is not a subject of mine.
Q. All right. I'm not going to ask you any questions about it then. But let's talk about the National Academy of Sciences.
Dr. Rodricks who is an expert for Garlock in this case, has called the National Academy of Sciences peer-review process, "the most demanding peer-review process on earth". You wouldn't dispute that, would you, ma'am?
A. The most demanding peer-review process. Well, I certainly think the -- I might not state it quite that way. Because the academy -- there are many demanding peer-reviewed processes. So I don't know that I would say one is more so than the other. But certainly the National Academy of Sciences, if there is a repository wisdom on topics, the National Academy's held in high esteem.
Q. And -- can I have the National Academy of Sciences

document?

In 1984, the National Academy of Sciences was asked to evaluate nonoccupational health risks from asbestos foreign fibers. You're aware of that, right, Doctor?

A. 1984?

MR. FINCH: May I approach the witness, Your Honor?

THE COURT: Yes.

MR. SCHACHTER: Your Honor, may I point out this is going beyond the scope of Direct and time has gone beyond the time agreed.

MR. FINCH: Your Honor, I started my Cross about 20 minutes ago.

THE COURT: No, a little longer than that, but --

MR. FINCH: I'll wrap it up.

THE COURT: -- move it along.

MR. FINCH: Excuse me, Your Honor. I'll wrap it up quickly.

Q. Ma'am, the National Academy of Sciences at page 203 talks about this "no threshold concept". And you have the document in front of you?

A. Yes.

Q. And what they say is "Several kinds of information are useful for estimating risks at low-exposure levels on the basis of observations at higher exposures. These include the shape of the dose response curve, and the range of exposure

studied, knowledge of the mechanism by which the type of toxic effect occurs, and information on dose-related changes in the uptake distribution, chemical or physical modification, and excretion of a substance, i.e. pharmacokinetics". That's what they write, correct?

A. If you say that's here, I will accept that.

Q. Okay. They also say, "The fundamental assumption underlying the N-O-E-L, which is no observable effect level, safety factor approach, is that some minimal level of a toxic substance is required to cause damage and the substance is not toxic below that level. The NOEL type of experiment is used to find that level. The maximum dose at which no toxicity would occur is called the threshold for that substance. However, several mathematical models are quantitative estimation of cancer risk assume that there is no threshold. Risk diminishes with decreasing dose, but some risk is assumed to remain as long as there is any exposure".

That's what National Academy of Sciences said about that, right?

A. Yes, in taking this excerpt, the NOEL safety factor approach originated in Italy in 1964, and was widely applied to agents that were not suspect carcinogens.

That second statement -- which you have now taken down -- is the statement that we -- that I said we all adopted, starting with EPA that I was co-author on in 1976. That

unless we knew the mechanism of action which I've said several times, that we would presume that there is no threshold as establishing a plausible upper bound on risk. This does not mean that there are real risks at that level. They're not talking about real risk, they're talking about theoretical risk.

Q. Well then they go on to say, "The determination of which of these two assumptions is correct, will probably depend on the nature of the toxic effect".

A. Right.

Q. "Thus, understanding the mechanism of toxicity to provide guidance in setting acceptable exposure levels, for a substance that exerts its toxic effect by inactivating an enzyme present in abundance in each cell, it is reasonable to assume that a threshold would exist. On the other hand, a chemical that is mutagenic or carcinogenic because it damages some critical site on a DNA molecule that starts the carcinogenic process, can reasonably be assumed not to have a threshold. The likelihood that a critical site would be damaged, would decrease the decreasing dose, but the possibility that this damage could occur remains at any exposure of above zero".

That's what the National Academy wrote in this risk assessment document?

A. You will find what I co-authored in 1976 said the same

thing. And what it means is that the possibility for public health protective purposes has been presumed since 1976, and it has not changed. This is repeated in the EPA 2005 guidelines. This document you said is from 1984. This is no different, and EPA's guidelines in 2005 are no different.

And that is, in the interest of public health protection, we absolutely must look at setting protective levels of very low doses for all carcinogens, not just asbestos. This is what we assume, and so I think I've explained this --

Q. And the National Academy of Sciences went on to use actual human epidemiology studies to estimate risk. And they looked at chrysotile cohorts, crocidolite cohorts and amosite, right?

A. I have not recently read this document.

Q. Okay. Well, they go on and they say, "For exposures as low as .0004 fibers per cubic centimeter for a lifetime exposure at that, all mesothelioma exposure groups, there's a risk of nine cases per million, right?

A. This is a very typical -- I don't know -- first of all, they're speaking solely of one fiber type or another. But this is exactly what we see throughout all the literature and literature I co-authored, speaking to the issue of theoretical risk at low dose.

Because we were always trying to decide how to make the best decisions in the zone of inference where we have no

scientific evidence that there was any real risk at all. But rather how much theoretical risk should we accept. And we spoke in terms of these kinds of estimated individual lifetime risk.

And in fact what EPA did, is to prevent the public from misunderstanding what we meant. We have our science advisory board approve a statement that went on every document saying these are plausible upper bounds on risk, the real risk could be less, even approaching zero.

Q. Isn't it true, ma'am, that the National Academy of Sciences, when it estimates its mesothelioma risk, it found a lifetime risk at that level of exposure of nine per million, nine cases per million. Which is approximately .87 times 10 to the minus 5th is also approximately nine cases per million, right?

A. They're not speaking of real risk. They're speaking of the same thing I've spoken of for years. This is a theoretical risk. This is isn't an incidence. This is an inferred risk. It's based on inference judgments. This isn't based on scientific fact. This is our best judgment as a foundation for setting public health policy in a protective way.

Q. Okay. When you were at the EPA, you were asked to -- your office was asked to look at the estimate of lung cancer risk from passive smoking. That was a memorandum you wrote in

1984, right, ma'am?

A. If you say so. It's a long time ago.

Q. And this memo is in response to the request that the Carcinogenic Assessment Group review the paper by Repace and Lowrey on the risk of lung cancer due to passive smoking. Herman Gibb of CAG has prepared a review of the Repace and Lowery paper, and a copy of his review is attached. His conclusion is that "two of the annual lung cancer risk estimates for passive smoking generated by the author, the lower risk of .87 times 10 to the minus 5th is better supported".

Then you go on to write, ma'am, "It should be noted that even at this risk would, given the size of the population exposed to passive smoking, translate into a significant population risk in comparison to other environmental carcinogens".

That's what you wrote in 1984 about that level of risk being a significant risk?

A. Well, I'm speaking of the theoretical risk zone. I'm a public health official, it is my responsibility to protect public health. I am not talking about causality. I'm talking about theoretical risk, so that we could make some public health protective decisions.

Q. Now you showed on Direct exam, the statement from Mine Safety and Health Administration. Do you recall talking about

that?
A. I'm sorry?
Q. You were asked on your Direct exam about --
A. Yes.
Q. -- the questions in various federal registers, and one of them was the -- Cam, click it up forward -- you were asked about that, and isn't it true that what those regulations actually say, "Although OSHA stated in the preamble to its 1994 final rule that there is a remaining significant risk of material impairment of health or functional capacity at the 0.1 fiber per cc limit, OSHA concluded that this concentration is 'the practical lower limit of feasibility for measuring asbestos levels reliably'. The MSHA agrees with this conclusion", right? That's what they wrote in the regulations, correct?
A. That's what they wrote. And what they meant is, there's always debate in this zone of inference, because we don't have scientific fact. We are using judgments about sliding up and down this upper bound risk line of where to draw a line in the sand that's necessary under OSHA's enabling legislation. But they are supposed to protect worker health. So they cannot knowingly set a permissible exposure limit that does not protect public health. It's -- they would be sued if -- they can't do that.
Q. Ma'am, you talked on your Direct Examination about the WR

Grace case and the Zonolite attic insulation case in particular. Do you recall that?
A. Yes.
Q. And the Zonolite attic insulation case was a case involving whether people had a claim for property damage, right? That's what the quote you read out of Judge Fitzgerald's opinion was about, right?
A. I was involved in both matters, the bankruptcy matter and the matter involving attic insulation.
Q. And what you talked about today, was the matter involving attic insulation. That was a case about whether people who had Zonolite attic insulation in their homes, which had been through the popcorn processing, had a right to have WR Grace pay for remediation of their homes. That's what those lawsuits were about. They weren't about mesothelioma people suing WR Grace, right?
A. As far as I was concerned, my assignment was to look at the risk. I don't know what the legal -- I don't know what the legal questions were. But as far as I was concerned, I was very much in the role of establishing the public health risk associated with asbestos being in peoples' attics, and I wanted to know what that risk was. Now if its ultimate use was to determine property damage or whatever, I was not focused on that.
Q. And are you aware, ma'am, that the same judge who issued

that opinion about attic insulation in the context of property damage, also did an estimate of Bondex's asbestos liability relating to chrysotile asbestos from joint compound? Are you aware of that?

A. I have heard about that opinion. I know very little about it.

Q. And she -- and isn't it true that in that opinion, she said that chrysotile asbestos from joint compound can cause mesothelioma. And she estimated Bondex's asbestos liability at over $1 billion, which was 10 times higher than what Bondex's experts, which is the Bates White firm, was coming in at, right?

A. I was not involved in that proceeding. I know that Judge Fitzgerald, when she wrote the decision regarding attic insulation, and when I testified in front of her, thoroughly understood the scientific issues that I was talking about. I could tell that. What I don't know is how well she was informed in the Bondex case. I was not there.

Q. And you wouldn't expect her not to thoroughly understand the scientific issues if she was presented with them in that case, would you, ma'am?

A. I don't know what she was presented with.

MR. FINCH: Your Honor, that's all the Cross I have.

THE COURT: Okay. Anything else, Mr. Schachter?

MR. SCHACHTER: No, Your Honor.

THE COURT: Thank you, Dr. Anderson.

MR. FINCH: Your Honor, at this time for purposes of Rule 104, we would offer ACC 3341, 3052, and 4323, which is the IARC document, the World Health Organization document, the National Academy of Sciences document. We would also offer ACC 3214, which is the British Journal of Cancer 2012 paper, and ACC 5063c, which is the editorial from the British Journal of Cancer, all for Rule 104 purposes.

MR. SCHACHTER: No objection.

THE COURT: We'll admit those.

(ACC Exhibits No. 3052, 3214, 3341, 4323 and 5063c were received into evidence.)

THE COURT: Okay. You can step down, Dr. Anderson.

And why don't we go to lunch and come back at 2:00.

(Lunch recess.)

THE COURT: Mr. Harris.

MR. HARRIS: Yes, Your Honor. We call Dr. Lambertus Hesselink.

LAMBERTUS HESSELINK,

Being first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HARRIS:

Q. Please tell us your name.

A. Lambertus Hesselink.

Q. Where are you from?

A. The Netherlands.
Q. Where are you from now? Where do you live now?
A. I live in California. I work at Stanford University.
Q. What do you do for work?
A. I do research, and I teach, and a few other things.
Q. Dr. Hesselink, last week we heard from Dr. Peterson and he displayed this slide, and he identified Dr. Longo as an event -- as -- or his emergence as an expert witness as an event that affected the plaintiff's case against Garlock and how it may have supposedly improved. Have you looked at some of Dr. Longo's work?
A. Yes, I did.
Q. And specifically have you looked at his Tyndall lighting demonstrations?
A. Yes, I did.
Q. He showed a Tyndall lighting demonstration to the Court when he testified a couple weeks ago regarding Gasket Study IV. Is that one of the studies you've looked at?
A. That's correct.
Q. You've reviewed his testimony about what he said about Tyndall lighting currently, and in the past?
A. I have.
Q. I want to ask you about Dr. Longo's opinions, but before I do, I would like to ask you about what qualifies you to address these topics.

Can you please tell us about your educational background?
A. I was educated in The Netherlands. I actually have two degrees in applied physics and in applied mechanics. I figured that physicists couldn't build anything and mechanical engineers didn't know about enough physics, so I took both classes and graduated. Then I went to Cal Tech as a Fulbright Scholar, and got a degree there in Master of Science, and I got a Ph.D from Cal Tech as well and I got an engineer's degree from Twente University, I did two degrees at the same time when I was at Cal Tech.
Q. Where did you go to work after you received your Ph.D?
A. After I received a Ph.D I was an instructor in applied physics at the Cal Tech for two years, and a post-doc for one year. Then I made assistant professor at Stanford University in 1980.
Q. All right. Did you ultimately become a professor at Stanford?
A. I did, yes.
Q. In what fields are you a professor? What departments do you teach?
A. My primary department is electrical engineering and applied physics, and I also have appointments in the aeronautics and astronautics department.
Q. What type of courses do you teach?
A. My primary field is in physics, applied physics, optics,

laser, matter interaction, optical data storage, optical scattering, large interaction between electromagnetic base and matter.

Q. What type of research have you done over the years, generally?

A. I have been involved in a number of different research topics, started off in looking at flow visualization. And these are gas or liquid flows that are built as particles, and looked at the scattered light that is coming off of the particles, used that for visualization and analysis purposes.

I've also been involved over the last 15 years or so developing both theory and practical applications of the interaction of nanoparticles and nanomechanical and optical structures.

I teach courses in the areas of lens design. I teach courses in the area of electromagnetic waves and how you actually can find solutions to them, the interaction of light as electrical devices and particles and objects. I have taught courses in nanophotonics. I've taught courses in the analysis of optical systems using Fourier analysis. I teach and have taught courses in mathematics that are related to these subject matter.

Q. Have you published your research in the peer-reviewed literature?

A. I have published over 400 papers in peer-reviewed

journals.
Q. Has your work been recognized generally in the scientific community?
A. I would assume so. I was made a member of the Royal Dutch Academy of Arts and Sciences. And I've held other distinctions in terms of professional awards for work that I have done. I am a fellow of the Optical Society of America, the Institute of Instrumentation Electrical Engineers, and I was a Fulbright scholar and a number of others.
Q. One of the pictures we displayed before, it references the Hubble Space Telescope Committee. Can you tell us what that involved?
A. Well, in -- I think it was 1990, on the 3rd of July, I got a phone call from NASA and said Houston, there's a problem. And so they asked if I could come to Washington on the 5th of July. And it was a ad hoc committee that was formed. In fact, there were two or three committees, and I was on one of the ad hoc committees to try to fix the Hubble Space telescope. And ultimately the recommendations that we made were followed up by JPL and fixed the telescope.
Q. Dr. Hesselink, Dr. Longo's -- well, Tyndall lighting generally, that involves light scattering?
A. Yes. It's the interaction of electromagnetic waves with particles and so that would be called light scattering.
Q. Have you published papers and conducted research with

respect to light scattering?
A. Yeah, I have a number of papers in that area, yeah. I've also written a number of book chapters on this subject.
Q. Have you taught courses that relate to light scattering at Stanford?
A. Yeah, I think amongst the ones I just enumerated, there are probably six or seven courses that I teach related to that subject matter.
MR. HARRIS: Okay. At this time, Your Honor, we would offer Dr. Hesselink's CV, it's marked as Exhibit GST 15160a.
MR. FROST: No objection, Your Honor.
THE COURT: We'll admit that.
(Debtors' Exhibit No. 15160a was received into evidence.)
MR. HARRIS: At this time we tender Dr. Hesselink as an expert witness in mechanical engineering, applied physics, light scattering and Tyndall lighting.
MR. FROST: No objection.
THE COURT: We will admit him as such.
BY MR. HARRIS:
Q. Dr. Hesselink, I would like to turn to the work that you've done in this case. This is a still photograph from Dr. Longo's Gasket Study IV. Do you recognize this?
A. Yes, I do.

Q. And is this what we see under the Tyndall lights in Dr. Longo's experiments?
A. Well, I was asked, Your Honor, to determine whether it was possible that the bright spots that you see on the picture, if these could be caused by scattering from asbestos fibers in the range from 0.01 microns to 3 microns in the diameter.
Q. The question that you put -- well, let me first ask you -- you've put together some slides that we're going to go over, is that correct, to help illustrate the work that you've done?
A. That's correct.
Q. The question you posed here is, Dr. Longo states that the Tyndall lighting technique he has used, allows him to see respirable asbestos fibers in the range of 0.01 to 3 microns in diameter.
And the question is, is that possible; is that right?
A. That was the question that I was asked, that's correct.
Q. We've provided transcripts to you of Dr. Longo's testimony through the years with respect to what he said about Tyndall lighting and what we can see; is that correct?
A. That's correct.
Q. You identified some of that testimony for us; is that correct?
A. Yes. Your Honor, I was interested in trying to find out

exactly what Dr. Longo was referring to so that we -- or at least I could pose a clear question and answer it.

And so I went through the deposition transcripts that related to the matter, and I put a few of these slides together here that I think are relevant and help frame what the question is.

Q. So this slide here speaks of -- this is Dr. Longo narrating a Tyndall video. Now we're going to see the electric wire brush, too, again. And what you're seeing here with the Tyndall lighting is the microscopic particles and fibers that are coming off the gasket in referencing respirable size particles; is that right?

A. Yes. So that was one of the references that relate essentially to what the observation might be according to Dr. Longo.

Q. In this testimony that you identified he's saying that -- is it your understanding he's saying that he thinks we're seeing single fibers, single bundles, single matrices, not clusters; is that right?

A. Yeah. I think the language there is that, do you think that multiple fibers or multiple bundles were scattering the light that created those bright spots on the film. Those, Your Honor, are the bright spots that are visible on the previous picture.

And the answer is yes, I think those are single fibers

that -- single fibers, single bundles, single matrices.
Q. Why is that significant to you?
A. The question is really what we see on the image. Could that be caused by respirable fibers in the range that Dr. Longo indicated from 10 nanometers to .01-micron to 3 microns. So that's the question that I would like to investigate from a scientific perspective.
Q. All right. He references here that with respect to Gasket Study IV, everything that he sees -- or it would be his opinion that almost 100 percent is respirable?
A. That's what he says, yes.
Q. Then you've identified a couple of slides where he's identified the size range of the particles; is that right?
A. Yeah. He says that we can see -- and this is referring to the Tyndall lighting technique, Your Honor, down to .01 or .02 microns in diameter, and the calculation has been done so that refers to 10 or 20 nanometers in diameter.
Q. Can you explain what that size range means to you as a scientist or to us as lay people? How small is that that we're talking about?
A. I was going to try to make a comparison to a human hair which is -- I don't have that much hair, so it's not mine. But that's typically on the order of microns, maybe 5 or 10 microns or so. And so the 10 nanometers is a very, very small size. It's about equal to maybe 100 molecular sizes.

Q. Here he talks about in the size range of .02 to .03 microns in diameter.
A. Well, it's a little bit more specific. I thought that he says that the Sony camera is able to look at a population of chrysotile fibers that have a diameter of .02 to .03 microns and cause enough light scatter to be recorded by the Sony camera and that's my opinion.
Q. Why is that significant to you?
A. Well, this Sony camera is part of this Tyndall lighting setup, Your Honor. So he was referring to what his optical setup was capable of seeing. And he offered that as an explanation of what these bright spots in the image are.
Q. So -- and then the last slide we have on his testimony talks about the maximum diameter being 3 microns of the fiber. Why is that significant?
A. Well, because in the earlier reference we refer to a respirable-size fiber, and so it was important that we both know what that range is. And so the range that he established there is less than 3 microns, which is consistent with what I've seen in the literature.
Q. So is that the aerodynamic diameter or is that just the actual diameter of the fiber itself?
A. That's the physical diameter.
Q. What's the difference between aerodynamic diameter and the actual physical diameter of the fiber?

A. Your Honor, if you have a general fiber, it looks maybe has an aspect ratio of 10 to 1. Meaning that the length may be 10 times longer than the diameter. And it also will have a shape that is not necessarily just a single cylinder. There is a concept which essentially says that the aerodynamic behavior of that structure can be understood by looking at a sphere of a diameter that would have equivalent behavior to that particle in air.

And so the aerodynamic diameter, typically, is a little bit larger than this general diameter of the fiber would be. But from a perspective of how it would behave in an aerodynamic environment, the sphere and fiber would have similar properties.

Q. So that brings us back to the original question that you sought to answer.

Your Honor, there will be a few slides. It might be helpful if Dr. Hesselink could step down from the stand.

THE COURT: Okay.

BY MR. HARRIS:

Q. Dr. Hesselink, would you like to step down, please?

A. Yeah. Is it possible to get a microphone because I'm not sure if my --

Q. Yeah, she has one.

Come back around this way. Maybe it will actually be better if you stood over on this side.

A. Okay.
Q. You can see the judge.
So can you tell us how did you go about answering this question?
A. Well, the first thing that I wanted to do was -- can you go back to the previous slide?
Q. Sure.
A. So the question is what I was looking at in that rating up there. And so what you see is, Your Honor, a number of bright spots. And then there's certain areas where this is part of the clothing, and then up in the left-hand corner you see a light lot of very bright light sections.
So the question that I tried to investigate was as I look at these bright spots, can they be caused by these particles that are respirable asbestos in this particular range. And that's the range that Dr. Longo said that we would be able to see. Now the important part of this is that the size is a very significant parameter in the overall light scattering process. And so I can probably explain that best by looking at the next slide.
The basic idea is that there is a light source here. You can think about this as maybe a flashlight light source. Then there is a parabolic mirror, that typically takes light from an element. This is on the upper left-hand side, makes that into a collimated beam, which is a parallel beam of light,

sort of like a search light.

Then there is not really visible, but at least in a cartoon format, there's an indication there that we have a sample. So these would be the fibers that would scatter light from that light source. And the geometrical setup -- is it possible to get some water --

MR. HARRIS: Do you need some water?

THE WITNESS: Yeah.

MR. HARRIS: Sorry about that. I should have had one for you.

THE WITNESS: Sorry.

So the light that is coming from the source, scattered by the particles that are visible in that region. And in a Tyndall lighting setup, what you do is, you take a camera that essentially is up axis of the main direction in which the light is propagating, so that you look at the scattered light of an angle of about maybe 5 or 10 degrees.

In the literature that is referred to as forward scattered light. Because the light is coming in, in this direction, and it is scattered in the forward direction, that's what we measure.

In practice I will show you shortly the light actually scatters over 360 degrees, not only forward, but also backwards.

So in this particular case here, the Tyndall

lighting technique that has been used for scientific applications for many, many years, is kind of basically depicted here. What I set out to do was to try to determine what are the critical parameters in this problem.

The first thing that is important is that the light in this particular case is shown as yellow. The light that is being used is white light, and so essentially has a spectrum of the visible range from about blue to red. And so somewhere in the order of about .4 to .6 microns. And that's the wavelengths of the light that's being used.

That wavelength's .5 microns, let's say the middle of the spectrum, sets the length scale of the problem. What I mean by that is that the particles will behave in a very different way if they are much smaller than the wavelengths of light, or if they are similar in size or larger than the wavelengths of light.

So of the range that we have established now that Dr. Longo says is visible here from .01 to 3 microns, the .01 is much less than .5, so that's actually in the regime where the size of the particle is smaller than the wavelengths of light.

Then on the other end of the spectrum, the 3 micron, the particle is larger than the half micron typical wavelength of light. So that ratio actually determines the two regimes in which the scattering works. One of them is called Rayleigh

scattering, and that is the case in which the light is actually longer than the diameter of the particle. So the light has a certain wavelength. That wavelength is this long, the particle is very small.

In that regime the amount of light that gets reflected or scattered from the particle essentially decreases as the ratio of how small the particle is compared to the wavelength of light to the 6th power. So if I have a particle that is 1/10 the wavelength of light, which is roughly here, then the amount of light that gets scattered is 1 million times smaller than if I had a particle that is the same size as the wavelength of light.

So over the range of particles that Dr. Longo says he can see, the amount of light that gets scattered is roughly a million times smaller on the small end than it is on the large end. So the basic message there is that it is not just a uniform and simple linear relationship, but the small particles scatter a very, very small amount of light.

The second thing that is important to this is that this camera is essentially looking at the object -- and if you can go back to the previous slide. What you see here is that the camera is actually looking at the light that is coming in this direction and then comes off at an angle and records that on the video recorder.

So it is important to note that this object here is

the work study that Dr. Longo carries out, and you can see the light scale is about the size of a person there, and that got actually imaged onto a small detector that's about the size of a centimeter. So if you go to the next slide.

In this particular configuration, this camera is looking at the particles and decreasing its magnification. So what this is doing is essentially, the human eye cannot see a 10 nanometer or .01 micron particle. With this optical setup there is another reduction that essentially makes that even more difficult to see.

In fact it would be the equivalent, if you wanted to see with this setup the particles that have the size of 10 nanometers or .01 micron, it's like looking at a baseball in Chicago, but I'm in San Francisco. So optically I cannot see that. So what you're seeing on these pictures, the bright white spots, cannot be images of these small particles. Because in order to see those, I should have used a microscope, and in fact that is what Dr. Longo is using. He used a scanning electron microscope to determine what the size of the particle is.

So the few things that is important is, the first one is that we can't image them because there's not enough resolution. In fact, it's the wrong instrument to image these small particles, you should have used the microscope.

The second question is, is there enough light that

even if you couldn't image them, you would have a blur or a blob of light that would be as a result of light scatter from these small particles in the image.

So in order to answer that second question, I did the following. The next slide.

So in this particular slide, Your Honor, it's now a slightly different setup. And what we have in here is a laser instead of a white light source. Then there are a number of lenses. There's an aperture in here which produces a beam of light that goes through some optical elements and that are not important right now. And then there's a small sample here.

The scientific approach to figuring out whether or not you can see a single particle is to take measurements of a single particle. And so instead of having the whole cloud, you determine, is it possible that a fiber of a certain size connects the -- produces enough scattered light so that we can measure that.

And so we then used the same configuration as I showed you before, but the sample is now here, and I have a camera which is a detector. This is not a video camera. These detectors are orders of magnitude more sensitive than a video camera. I take this detector and I essentially move it around this optical axis. So if the light is coming toward here, Your Honor, and the detector is there, I essentially move the detector like that, and I measure the scattered light

in each one of those locations.

Why do I use laser? Well, one, it has a single wavelength so I said earlier, does have the length scale of the problem of the interaction.

Second, light actually vibrates either in a horizontal or vertical direction, that's called the polarization.

Thirdly, we can focus it very tightly into a very small spot here.

And thirdly (sic), we can essentially then do measurements for which we essentially look at the scattering from that particle.

BY MR. HARRIS:

Q. In the sample, what is the sampling used?

A. So the sampling here is a single asbestos fiber that is mounted onto a ring. So if this is a ring of metal, I used a -- at least I did and somebody did prepare a sample for me -- that put a fiber on the ring on both sides so that there is a hole in here and I can then illuminate with my laser beam and I can measure the scatter light that comes from that single particle.

Q. And that detector, as you said, is more sensitive than what you would ever see in an off-the-shelf video --

A. By orders of magnitude, yeah. And we need that because we need to determine, quantitatively, how light is scatted

from that particle.

Q. All right.

A. The other example is that this is not enough because in the experiments that Dr. Longo conducted, he actually used the white light source. And as I just explained, there is a whole range of wavelengths there, so we need to really determine what the effect of having a range of wavelength is as well.

So we then did the same experiment. We have a light source here. We have a -- in this case a small aperture. The purpose of that aperture is that it will allow us this optical element in here, to take this aperture and image it onto the fiber. And so the fiber was 25 microns long. And so of the 25 microns, I only illuminated a small section of them and I made very careful measurements to make sure that there was no scattered light from any of the mounting structures there, because that could contaminate the results.

And then what we did is, we essentially had a detector as well as a camera. And so there is a flipping mirror. If the mirror is actually out of the way, I can make the quantitative measurements. If it's in the way, I can see the setup, whether or not I can actually see a spot on that camera that would determine whether or not you could see the light scatter from these particles.

Q. Okay.

A. Then we went through that result, there was something

called a scattering cross section. Essentially what it means is that if there is a certain intensity of light that comes into this particle and this fiber element, how much of that gets scattered out, and that is what this is. So that is 6 times 10 to the minus five or it is .9 micron diameter.

As I said earlier, these are the larger fibers because if you cannot see the larger fiber, the smaller fibers cannot be seen by a million times. And so the question was, what do we do in this case with the experiments?

We did this, and we looked at single fibers and we looked at a bundle of fibers. And so these are the results, and so we get these experiments and came to the conclusion then we did most of the imaging and the quantitative results that we could not see any image at all, let alone the very, very bright spots. And then go back to the first picture. One more. Yeah.

Your Honor, these bright spots in here are white. The reason they're white is in the camera there is actually a dynamic range. There's a certain threshold below which you will not get any image. But then there's an upper limit as well. And if there is a lot of scattering in the upper limit and that will be the maximum intensity that you will see in your image. Those are all saturated spots. So they are in the top of the dynamic range. What we measured was, is that below the threshold, there was not enough light to even expose

the film.

So when we went back to the results, these experiments were done with great care, but it's very difficult to, for example, look at the effect of certain things. This, as I explained before, the fiber was mounted on the small ring, and so the ends of it are not accessible.

So if I -- and it was suggested that -- maybe by Dr. Longo at some point -- that maybe it's the end of the fiber that is causing these bright spots, it's not just the fiber itself.

So in order to answer that question, I went in and I did a numerical analysis. So this problem here is a problem by which electromagnetic waves have essentially satisfied something called Maxwell's equations. You need to find a solution to Maxwell's equations for the scattering problem. That has not been done before. But we built at Stanford a technology which is called a -- terrible word -- Finite Difference Time Domain Analysis. And so FDT analysis of Maxwell's equations, essentially is an exact solution of this problem.

Q. This is a mathematical model that you're describing?

A. This is a numerical model of Maxwell's equations. And Maxwell's equations are well known and have been tested for several hundred years as to the accuracy of what they represent.

So the question was only how do you do that on a computer. And so what we did was, we took the fiber of various diameters, and light was coming in with different polarization. As I said earlier, the light can be propagating or actually fluctuating in this direction is propagating or in that direction.

As you can imagine, if the fiber is like this, if the light comes in, goes up and down like that, you would have maybe less or more scatter than if it is actually vibrating like this. And so those are referred to as polarization TE and TM.

And then we came in at different angles in the numerical experiments, and we can calculate the light that gets scattered 360 degrees. And we can also do that by just looking at the ends or at any intermediate angle.

So that tool gave us the ability to create inside, as to what the physical mechanism is.

Then what I did is, I took several of the same configurations as we tested in our experiment, and compared to numerical results, as the experimental results in terms of the scattering cross sections.

So what you see, Your Honor, is -- no, the previous one.

Q. Go back?

A. Yeah. So one thing that you see here, Your Honor, is a typical plot, a scatter plot. Although it's not very visible

on this projector, there are actually circles here are concentric about the particle. So this is the particle that is here. Light is coming in and in this direction -- in this direction, sorry.

And then what you see here is that the distance away from the center indicates the amount of light that is being scattered in that particular direction. And then going around the circle you've got the 360-degree intensity.

So if particle is here, my beam comes in like that. And I can go around it, I can measure the scattered light.

What you see is that this is in a forward direction that most of the light here has a very high amplitude and a backward direction there is not much. If you take this very small area where they are upgrading, you see several what are called these lobes, and so most of the light goes in the forward or in the directions of a few degrees. That's why you come out in about 5 or 10 degrees to try to get as much scattered light as you can.

However, because of the fact that these particles when they become larger, scatter primarily forward, this technique filters out most of the small particles and makes them invisible, even if there was not -- if there was enough light. And the reason for that is that as I said earlier, with the 1-micron type particles, most of the light is in the forward direction.

But the very small particles, if you look in the sky, the sky in all directions is blue. Forward and backward light is identically the same. So for the .01-micron particles, there should have been a lot of light going in the opposite direction.

So when you look at all of this and you make a comparison -- the next slide. What I did was, I looked at some of these measurements, and I compared them against the numerical results, and we showed that they were very closely the same. Once we established that that was the case, we could then use the numerical tool to determine whether or not it would be a lot of scatter coming from the edges, and what angle I would get the most scatter, what the effect of size, shape, polarization, all of those things that are more difficult to do in the experiment, I can do them in the numerical calculation, and we did.

The net result of that was that under all circumstances using the setup that Dr. Longo had, it is not possible to see any of the respirable fibers in the range from .01 micron to 3 microns.

Q. So the answer to that question would be, no?

A. So the answer is, the technique that he used, those bright spots are not particles in the breathable respirable range from 0.01 micron to 3 microns.

Q. So the next question is, what about they're at a high

enough concentration? Is it possible that the bright spots represent clusters of particles in the size range described above? And specifically, going to Gasket Study IV, in these concentrations that he's reporting, from 4 fibers per cc, up to 24 fibers per cc. And then in later studies he gets 36 fibers per cc, maybe even as high as 70 fibers per cc.

If they're in a cluster like that, in that concentration, is that a sufficient concentration so that you would be able to see them under the Tyndall light?

A. Your Honor, the basic idea that was proposed was that if you look at the sky, the particles are incredibly small, you know, they're essentially .0001 micron, but you still can see the blue sky. And so obviously even these small particles scatter enough light. And so could that be a possible mechanism that we see here, that there would be a cluster of these particles and that would cause that?

When we do the calculations and the experiments, in fact we did experiments of several fibers in a cluster, it turns out that the amount of light that gets scattered from the bundle of fibers is actually lower than it is from the single fiber.

And the reason for that is that some of the light that gets -- some of the light that gets reflected or scattered from the first one, gets scattered again for the second one, they're very close. And so the net result is, that it's

actually a slightly lower one.

However, when you do an estimate, it turns out that if you had a very large number of fibers out of something like three orders of magnitude more than what Dr. Longo measures, and I have no opinion about whether or not these numbers are correct, but assuming that they are, these are off by several orders of magnitude to be able to provide, even for the largest fibers. For the very smallest fibers they're off by something like five or six orders of magnitude. And so it's not clusters that are represented in that image.

Q. Dr. Longo did -- so the answer to that second question is, no, the second question?

A. Correct.

Q. But Dr. Longo did testify to this in this trial. He said if you're using a product that has 10 percent asbestos in it, it's my opinion that the dust that's seen in Tyndall lighting would be approximately 10 percent.

If you're pouring raw asbestos, then what you're seeing in the Tyndall lighting is all -- is 90, 99 percent of the asbestos and some other minerals may be there.

Based on the research that you have done, does your research support that conclusion, that the percentage of the dust that's in the product, matches the percentage of the dust that you see in the Tyndall lighting?

A. Your Honor, the suggestion is that if I have a cloud of

particles, and 10 percent of it is asbestos, and 90 percent is something else, then when I take a picture, I will also see 10 percent of asbestos and 90 percent of something else.

The problem with that approach is that that assumes that there's a linear relationship between the scattering of the particles with the sizes that are in the respirable range over the whole mixture that I have.

And so the problem is that in the Tyndall lighting technique, which I said there were two things, one of them is that the larger particles essentially scatter more light and they scatter in a forward direction.

And the second part of it is, is that the smallest particles from .01 micron to 3 micron cannot be seen at all. So the technique essentially filters out all of the particles that are too small. They're essentially below the threshold, and they don't provide an impression onto the detector.

So to say that 10 percent was asbestos out of this total cloud, and therefore I see 10 percent is completely false. Because there is for the smallest one, a million times too little light in order to even be able to make an impression on that.

And so the imaging technique that is being used does not represent the same ratio as what Dr. Longo indicates. In fact, you won't see any of those fibers.

Q. Dr. Hesselink, you've laid all this out in your report.

Is there a couple of attachments to your report that identify the equations that you're using, the measurements, and how you setup your experiment; is that correct?
A. That's correct.
Q. And that information's available for anyone that would like to try to reproduce it, correct? You provided that kind of detail?
A. Yeah. We essentially wrote it up, Your Honor, to try to get this published. I haven't done it yet. I've been very busy with some other work. But we will do that. And I've made it available to whoever wants to read this in this case. So we have given all the data, all the information, and so someone can actually do either the calculations or the experiment.

MR. HARRIS: Thank you, Dr. Hesselink.

THE WITNESS: You're welcome.

MR. HARRIS: That's all. We pass the witness.

THE COURT: Why don't you start out back over here.

CROSS-EXAMINATION

BY MR. FROST:
Q. Are you ready, sir?
Good afternoon, sir. My name is Scott Frost. We've not met before, have we?
A. No. Yeah.
Q. So sir, basically what your testimony comes down to is,

you disagree with Dr. Longo about whether you can see respirable fibers using the Tyndall lighting method, correct?
A. That's -- well, I said exactly what I said. If you prefer to be specific, I posed the questions, I answered those questions. Your summary is, I think, reasonably accurate, yeah.
Q. Okay. And in order to do that, you've done some experiments. But you're getting paid $600 an hour to be here?
A. No, not for the experiments.
Q. We're going to get to the experiments. But you're getting $600 an hour to be here, correct, to testify?
A. To be here, yes.
Q. Okay. And you were paid for those experiments when you add it all up about $50,000?
A. I believe that was about right, yeah.
Q. Okay. And the money you get paid, even though you may do some work at Stanford, that money doesn't go to Stanford, it goes to you?
A. No, not the $50,000.
Q. How about the money you're getting paid, 600 per hour, that goes to you, correct?
A. Yeah, the consulting arrangement we have at Stanford is that would be income that would go to me, yes.
Q. Okay. So 600 an hour goes to you. The money that you were paid for the experiment, some of it goes to you, some of

it may go to Stanford?
A. That's correct.
Q. Well, and part of that is because you use Stanford's -- some of their facilities and labs, right?
A. There are very strict rules about that, what you can and cannot do, yeah.
Q. Right. And they want to make sure if you're using Stanford's stuff, whatever you're doing, that they get compensated for that, correct?
A. There are certain rules, yeah. There's a certain threshold that if you actually exceed the threshold, then it becomes a contract that would go to Stanford. If it is less so incidental, it would not.
Q. Okay. Was this one that had to do that or was it incidental?
A. It was relatively incidental, yeah.
Q. Okay. So this test that you did to determine whether Dr. Longo's Tyndall lighting, you could see respirable fibers, that really was an incidental test that you did at Stanford, correct?
A. That was not my primary work, no.
Q. Now, you were first approached to review these videos and do these experiments in 2004/2005, correct?
A. I got a phone call from Craig Woods and he asked me to do that.

Q. That was in 2004 to 2005, correct?
A. That's correct.
Q. And in fact, if you had been approached, let's say in the year 2000, 2002, in that timeframe, this same type of basic research that you've talked about, this study that you did, the incidental study, you could have done that back then, right?
A. No.
Q. You couldn't have done it in 2000?
A. No.
Q. Why not?
A. As I said earlier, Your Honor, the experiments that I did I could have done in the early 2000 timeframe, but the tools that we used for the Finite Difference Time Domain solution for Maxwell's equations were developed only late 2009/'10 or somewhere in that timeframe.
Q. Okay. So the very last part you told us about, the Maxwell's equation, with the little drawing and diagram, that's something recent. But the actual experiment that you did where you were looking at fibers, you could have done that in 2000, right?
A. I could have done that in 2000, yes.
Q. Okay. So we'll separate those two out. There's nothing that kept you from doing the hard science experiment, not the calculation in 2000, correct?

A. I would say the calculation and also hard science, they're very difficult to do.
Q. Now, when you began those experiments, you were first contacted by the folks at ChemRisk, Amy Madl's one of those people?
A. That's correct, yeah.
Q. And ChemRisk, the judge may have heard a lot about that in the fact, but you're aware that ChemRisk is involved in asbestos litigation, correct?
A. Only in a very peripheral way. I have no detailed knowledge at all.
Q. Okay. But you're aware that the folks that were approaching you, were approaching you to be a witness in asbestos litigation and had published throughout the literature on asbestos.
A. No, I did not know that they had published through the literature in asbestos. I mean, there was some there and Amy Madl was doing a Ph.D thesis in University of California, Davis. And so after my first involvement in 2004/'05, I essentially did theoretical calculations. I told you earlier the Rayleigh regime actually has an analytical solution so you can solve that problem analytically.
The Mei solution is more difficult because it is a complicated mathematical series, and so I could not do that part of it, but I could do -- reasonably I could do

calculations that would indicate whether or not you could actually see these particles.

Q. And sir, I think we already went through that. The question was, when you were contacted by the folks at ChemRisk and Amy Madl, were you aware at that time that they were involved in asbestos litigation?

A. Not in any detail, no.

Q. Did you check the literature to see if we type in Amy Madl, whether she's written on gaskets, and whether that gasket studies were funded by industry?

A. Well, it was a little bit different. So when I actually wrote my first report, I was then approached by a few more legal teams, and then I was approached by ChemRisk to see if I could do some independent experiments to support the calculation. It was also Craig Woods who originally talked to me about doing these calculations. And so the question that he asked was, is it possible that I can do some experiments at Stanford to kind of substantiate the initial calculations that I did. And I think there was then a group of supporters, and I don't even know who actually was involved in that, who paid for the $50,000 study. It was my understanding that there were a number of attorneys or legal firms that were part of that.

Q. And so this number of attorneys and legal firms, you can at least agree with me, sir, that these were all people that

were involved in defensive asbestos cases, not people bringing cases on behalf of injured people?

A. I have really no knowledge of that. But I want to make sure that you understand how I work.

I'm not a hired gun. I'm not doing any work for any particular party. I'm not interested in giving opinions that I don't have any opinion about or that I have knowledge about.

I was asked to look at the basic fundamental physics of scattering from these particles using electromagnetic waves.

And so I was interested, but not to the point that this became anything that I'm doing research on. I'm focusing on other aspects of these light matter interactions. But it seemed a reasonable thing to do to say, are these calculations that I made in the beginning in 2004 and '5, are they actually backed up by experiments so that it's not just a theoretical exercise.

And so when Amy Madl and Craig Woods and others said we can actually support that, and so would you be willing to do that over a couple years, so with very low effort we set up these experiments and carried them out.

Q. And sir, you don't see your role in legal cases being an advocate, correct?

A. No. I'm actually giving you an independent opinion. And I hope that I can give you, Your Honor, an independent opinion.

In fact, in one case many years ago I was asked to give an opinion that I did not agree with, and I stepped out of the case and I didn't charge for that work.

Q. And sir, you were -- well, we can go forward and we'll come back. Your resume was marked in evidence, I'm not sure what it was, but you talk about your legal expertise, don't you, sir?

A. Yeah.

Q. And in fact what it says is -- this one's a little dated, I just looked at your one verified you've got it listed up to 2008, correct?

A. It's very well possible that's not all the way up to date.

Q. Okay. Well, we're going to talk about both those things. But at least in your resume of what you've listed under the copy I had originally under legal expertise, 1983 to 2006, you said, "I've been an expert witness in over 15 major cases and I've never lost a case".

A. Yeah.

Q. Now sir, you're not a lawyer?

A. No, I'm not a lawyer.

Q. So when you say you've never lost a case, and it says, "this includes expert witness services to multi-national corporations including Sony, Phillips, Hughes, Aircraft and Dolby, as well as smaller firms". How do you explain that?

Because lawyers lose cases, experts just give opinions.
A. This is not a legal statement. So all I'm saying is, is that I'm not prepared to -- and I've been asked, Your Honor, to give opinions that -- let me back up a little bit.

When I'm asked to do a case and become an expert witness, the first thing that I say to the party is that I have to look at the cases and in fact, and I have to determine for myself as to whether or not there is a certain position based on the science and the facts of physics that I know, that I can support. And I'm not prepared to provide an opinion in court with which I do not agree based on physics or my understanding of technology.

And there have been a number of cases where I have refused to be part of that because I have been in cases where colleagues of mine were in front of your colleague, and they would make statements, and find out and that their papers were very different than what they present in court, and so this caused a very great conflict. I'm not prepared to do that.

So in this particular case and any other case that I've been involved in, I'm not saying that I never lost a case. I mean, I'm not a lawyer. All I'm saying is, I've not been involved in cases where I am not willing to do things that are different. And I need to have a sense of understanding of what the technology is in these kind of cases before I'm prepared to do that.

Q. And sir, this is not the first time you've testified in court about Dr. Longo's studies, correct? You remember testifying in the Grigg versus Allied Chemical case. That was in February -- March of this year?
A. That was my first time, yeah.
Q. Yeah. Your very first time you testified. And you testified very similar to the way you've testified here, correct?
A. I don't change the law of physics. I'm giving you opinions as I understand them.
Q. Right. And so Dr. Longo testified in that case. That was not a bankruptcy case. That was a case in the tort system, correct?
A. I believe so, yeah.
Q. And you testified, and then the jury came to a verdict, and you're aware, sir, that that was a very substantial verdict for the plaintiff, correct?
MR. HARRIS: Well, hold on. I object, Your Honor. He didn't testify at a jury trial. He testified at a pretrial hearing and the Judge excluded Dr. Longo's videos. So Dr. Hesselink was not asked to -- wasn't needed to come to trial. So the Tyndall lighting videos were excluded. It's a highly misleading statement the way Mr. Frost has asked it.
THE COURT: Well, sustain the objection.
BY MR. FROST:

Q. Sir, did you testify in that case?
A. Only with respect to the two questions that I was asked here.
Q. Now let's go back a step to your expertise.
The Stanford -- not sure if I can read that -- the Stanford Photonics Research Center, that's you, correct?
A. No, that's not me.
Q. Really?
A. You mean the picture? No. Stanford Photonics Research Center is not me.
Q. Okay. But the picture is you?
A. Yes.
Q. Okay. You had me for a second, I thought I was wrong.
Okay. And we're talking about your training and experience. There's nowhere up there where it talks about you having any experience with asbestos, correct, sir?
A. I don't see that word, no.
Q. Okay. Well, in fact, what you do is, your training is as a professor of electrical engineering, correct?
A. No.
Q. That's not what you're listed as, sir?
A. Well, I assume that you were here earlier in court, but I have no degree in electrical engineering.
Q. Oh, well, that's why I was a little puzzled. Why did they list you as -- that's you, right?

A. These are the intricacies of the academic world. So I have a background in mechanical engineering, physics, applied physics, electrical engineering constitutes conventional design of circuits, constitutes analogue, digital, but it also involves light matter interaction. It involves photonic systems, networking systems, telecommunication systems and optics. So it is very common that people with a applied physics or physics have a position in electrical engineering.

Q. Okay. So now that we've cleared -- clarified that up, you're not a professor of electrical engineering then?

A. That's not what I said. I said I am --

THE COURT: He's not an electrical engineer.

BY MR. FROST:

Q. And your areas of research -- I can only go with what they put up.

Your areas of research are nanophotonics and optical data storage, correct?

A. Those are part of it. So what you need to understand is, you have my CV. So you can see exactly what I've published. You can see exactly what I've been involved in. This Stanford Photonics Research Center, is a center in which a number of faculty belong, in applied physics, electrical engineering, some of them in mechanical engineering, and I'm a member of that Stanford Photonics Research Center.

I have done a lot of work in terms of light matter

interaction for storage. I've done it for visualization. I teach courses in Maxwell's equations and solutions, that's all part of this. Not all of that is represented in here.

Q. And I know, sir. I'm just trying to -- I've looked at everything that's available that you've published, and you have not published a single article on asbestos, have you, sir?

A. I never made that statement, either.

Q. I know you didn't, sir, but we're trying to deal with your qualifications. So if I look to see what your areas of expertise are in the scientific community, it's that you have certain expertise, but none of those are asbestos. You've not listed those, you don't have peer-reviewed articles on those, correct?

A. I believe that you've accepted me as an expert in the light matter interactions. I don't think I was introduced as an expert in asbestos.

Q. Correct, sir, and that's my point is, you haven't published any peer-reviewed articles on asbestos. You haven't published this particular work that you've talked about on asbestos, correct?

A. I have not yet published that, that's correct.

Q. Okay. So let's move on to Tyndall lighting. You would agree with me, sir, that this Tyndall lighting effect that Dr. Longo has used, has been noticed and used throughout

science since the 1800s, correct?
A. Only partially correct. If you look at the details of how small particles actually interact with these light beams, and how they then propagate and provide an image onto the camera, some of those details are not well understood. And so that's why in this particular case we have a cloud of these particles, you need to look at the interactions. It's a very complicated, very difficult electromagnetic interaction process. And that's why I did these careful experiments to make sure that I could answer the question that was stated.
Q. And sir, if you would answer my question, we'll get done and we'll all be able to go home today --
A. I'm not --
Q. The question is, will you agree with me that this Tyndall lighting was a well used and well-understood method for visualizing objects beginning in 1800s with Sir Tyndall?
A. With all due respect, sir, I'm just telling you that it is not well-understood method in terms of what the lighting physics is. If you're saying is this a method that has been used to create pictures that you can actually see particles there that move and you see them and you can't see them with normal light, then that's probably true. But it is not a well understood and detailed method and there's still research going on.
Q. Okay. And sir, you're aware that companies such as Union

Carbide published in the 1960s, this phenomenon. This isn't something that Dr. Longo came up -- you're aware of this, correct? That Union Carbide in their toxicology report indicated and was quoted, "This dust concentration of 5 million particles per cubic foot of air is a threshold limit value for asbestos. This concentration of dust is generally not visible in the average work area, unless a beam of light causing a Tyndall effect is present. Usually the dust concentrations must be from 8 to 10 million particles per cubic foot before its presence is visible in average lighting conditions".

Sir, is this something you've studied?

A. If you had maybe listened to what I just said, then you could maybe recall. The issue is not whether or not you can talk in particles, and this is the problem which we have here.

You can't make generic statements and say, these are particles. If the particles are 5, 10, 20, 100 microns and I have a very strong light beam and I have a certain optical configuration, maybe under those circumstances I can see tens of microns of particles.

In this particular reference that you refer me to, there is no size. There is no intensity. There is no optical arrangement, there's nothing. So I'm not prepared to give a generic answer to a case which is very fake.

That's why if I can help the Court in any other way, I'm

doing this on the basis of a very well-defined question, and I'm giving you a very well-defined, reasoned answer. I hope I did that. And that's what I'm willing to do. But in this particular general case, I can't really say if this is true or not true.

Q. Well, sir, you're aware of the methods for determination of hazardous substances, the dust lamp, correct? You've seen this document, this isn't something new, correct?

A. I have seen the dust lamp document, yes.

Q. And -- well, and actually you cite that in your work, right?

A. Yes.

Q. Okay. And so the main use of the dust lamp, it says, is to "make fine airborne particles visible, i.e., particles below" -- and what does that stand for, sir?

A. What stands what for?

Q. Is that 10 micron?

A. Approximately 10 micron.

Q. Okay. "Usually termed respirable". And that's the issue that you're trying -- the question here that you're saying your studies answer, is whether particles that are respirable are visible using this Tyndall lighting method, correct, sir?

A. No. I'm just saying that -- what I stated was, is it possible that I can see these bright spots are being representative of single particles of asbestos in the

respirable range from 0.01 to 3 microns. That was the answer to the question that I gave.

In this particular case here, it doesn't say what the concentrations are. It doesn't say what the geometry was. Doesn't say what the setup that was used. You have to be specific in order to be able to answer the question. That's why I brought up these quotes from Dr. Longo. It's not that I'm doing this out of the blue sky. I'm doing this on the basis of a very well-defined question that was based on the statements that Dr. Longo made.

Q. Well, in fact, sir, this is a article -- not just an article. This is the method for determination of hazardous substances by the Health and Safety Laboratory of England. This is the English government establishing a procedure to do exactly what Dr. Longo did, correct, sir? And they go through detail after detail exactly how to do that?

A. No. This article describes the generic setup. It does not describe any specific way of determining whether or not you can visualize respirable particles under the conditions that Dr. Longo used for his optical setup. This is not --

Q. And sir, you haven't reproduced Dr. Longo's setup, either, have you? You conducted your own --

A. No. I did. I did. No, I did use for the experiments that we did, we used the same parameters that Dr. Longo used.

Q. Let's make sure the record's clear, sir. You did not

conduct an experiment that replicated what Dr. Longo did, correct, sir?
A. You mean, did I set up a laboratory in which we would actually cut materials and then visualize them?
Q. Correct.
A. No, I said what I did. I said -- I answered his question, and that's all I have done.
Q. Right. And we're going to go through your study quickly, sir. But you would agree with me, that at least as far as this article is concerned and this method that they talk about seeing particles that are less than 10 microns, not the limits that you were talking about, correct? And it identifies them as being respirable, correct?
A. No. You're mixing up certain things. 10-micron aerodynamic diameter. This is not the aerodynamic diameter that we talked about. I talked about the physical diameter which is .01 to 3 microns. That's what Dr. Longo said that he measured. Aerodynamic diameter is different from the physical diameter.
Q. Sir, have you seen Dr. Longo's rebuttal report where he talks about measuring fibers up to 10 microns?
A. I have devoted my energy to answer these two questions. I'm not an expert on the techniques associated with asbestos or measurements.
Q. And so it's clear, sir, you're not an expert on air

monitoring and air monitoring results and things like that, correct, for -- concerning asbestos?

A. Yeah. When the data came up and it said, you know, the documents that Dr. Longo quoted about the numbers of fibers per cc, I have no way of telling if that's correct or not correct. All I did is, I said, that's the data that he presented and I'll be willing to answer that on the basis of the things that I investigated.

Q. Okay. Well, let's move on, sir. And one of the criticisms you've had is somehow that Dr. Longo used some off-the-shelf video camera. That was some of the things you've been critical of, correct, sir?

A. What I was critical of was, is that the optical geometry that Dr. Longo used, involved the physical -- or off-the-shelf camera. That was not the point.

The point was, is that in this particular configuration he used a optical setup that reduces the resolution of the imaging system. And so if I can't see it with my naked eye, I certainly can't see it with the setup that is produced in the Tyndall lighting. And so it's a different phenomenon. That was my criticism.

Q. Okay. And, sir, actually this issue, the methods for determination of hazardous substance is, the HSE document, actually talks about using off-the-shelf photography, don't they, sir? You've seen that, right?

A. In the generic Tyndall lighting geometry, you can use off-the-shelf components. That's not the point. The point is, is that optical system capable of imaging or recording the light that is scattered from these particles onto that camera.
Q. And in fact, they recommend people using compact video cameras, SLR cameras, cameras that have 400 speed film. That's all things that they recommend when they're dealing with this issue that's separate from what Dr. Longo did, correct?
A. This is the description of the generic technology. It is not the description of the specific problem that we addressed here.
Q. And in fact, they talk about using small video recorders, exact same thing that Dr. Longo did?
A. But they didn't put in here that you could actually see particles from the .01 to 3 micron respirable rates.
Q. Right. Because what they were talking about is 10 microns. That's what they considered to be respirable aerodynamic diameter, correct, sir?
A. No, sir. What it says is that, the main use of the dust lamp is to make fine airborne particles visible. It doesn't say if there is one particle there. It doesn't say there was 10 there. Doesn't say there was a million there. Doesn't say there was a billion there.
This technique has been used for years, Your Honor, to

determine air flow. You have particles in the air. You scatter light off of it. And you see the generic underlying flow patterns. These technologies have been around. But --

Q. And that's my point --

A. -- under the circumstances that I was careful to frame my question here was, is, under those circumstances that Dr. Longo says that you can see the breathable -- respirable, I should say -- asbestos you cannot do that with this setup.

Q. You would agree with me that the general methods that Dr. Longo did using the Tyndall lighting as a method, that that was something that has been used in science prior to Dr. Longo as we have seen by the EPA and the folks over in England, correct, sir?

A. The general method of Tyndall lighting has been around for a long time.

Q. Now -- and you're aware, sir, that the EPA actually has an SOP for dealing with this? You've cited this in your report?

A. Yeah.

Q. It's SOP EPA Libby 02 that was done in 2001. You've seen that, correct?

A. Yeah, I believe that's correct.

Q. And again, they talk about using video cameras. And they say off-the-shelf video cameras, and they talk about using Tyndall lighting. So the EPA even recognizes you can use

off-the-shelf materials even as of 2001, correct, sir?
A. I don't think I ever criticized the fact it was off-the-shelf equipment.
What I criticize is that the statements that Dr. Longo made, the two questions that I answered -- in fact, the three questions, are not correct.
Q. And sir, do you even have any understanding of why the EPA created this procedure for Tyndall lighting?
A. I'm not an expert on that EPA.
Q. And we'll go through very quickly this last little bit.
Your experiment, it was to aim a laser at a single asbestos fiber and fiber bundle that you had glued to a piece of metal; isn't that correct?
A. That's what I stated.
Q. Okay. And I have a picture up there, but where's the videotape? We saw videotapes from Mr. Boelter, and we saw videotapes for Dr. Longo. Did you forget the videotapes?
A. Did I take videotapes?
Q. Yeah.
A. Of what?
Q. Of your experiment, so we could all watch it and see exactly what you did, and see if he could see anything.
A. I'm not sure if you've read my report. But in the report it usually states what we did. And so we followed a scientific method. So this report, Your Honor, was prepared

as being prepared for a scientific journal. You don't put a video in a scientific journal.

But what we did was, is, we took -- and I essentially set out all of the details of the experiments so that if you or Dr. Longo or somebody else wants to redo these experiments, you can do them.

The key point was, is that in order to be able to analyze the scattering from a single particle, and whether or not the answer or the question that I posed on the basis of what Dr. Longo said is important that you measure the scattering cross section. That's the standard scientific methods for addressing this product -- this problem.

Q. Sir, did you take a videotape of the experiment that you did; yes or no?

A. We took a video and we took still pictures, yes.

Q. Where are they?

A. They're in the report. The pictures are in the report. There's no video in there because there's nothing to see.

MR. FROST: Have you produced that video to us?

MR. HARRIS: I don't know what video you're talking about.

THE WITNESS: The video is, if you look in the report, there is a description there of -- we have a camera that essentially is looking at the particle and there is nothing that we can see.

BY MR. FROST:
Q. Okay.
A. And that is in the report.
Q. Sir --
A. Yeah.
Q. I understand the video camera is listed in the report, but you didn't keep the videotape and that hasn't been produced in this litigation, has it, sir?
A. We have produced everything that is needed in order to answer this question. If you can't see it -- this was the whole point, Your Honor, so --
Q. Sir --
A. No. No. May I answer your question just for one minute? Okay.

THE COURT: Let him answer the question.

THE WITNESS: The point, Your Honor, is, is that if I show a video that shows nothing, it's black. Then the normal criticism that I would have is, you probably didn't try hard enough. And so if you actually don't have enough light or whatever, you don't see anything. Okay. So that was not sufficient.

What we did was, is, we then went to and did a very detailed analysis and measurement of what the scattering cross section is. We compared it against what the level of intensity is that the video camera required, and we then did

take these measurements and we can't see anything. The video is black.

So we then showed under certain circumstances you could get very faint images if you make the images of the objects large enough and that's all in the report.

BY MR. FROST:

Q. I understand, sir. The only question is, have you produced in this case, a copy of any videotape of the experiment that you did; yes or no?

A. No, I have not made any copy. I've given you everything that you need in the report.

Q. Now -- and everything in that report has never been subject to peer review, correct?

A. Not yet, no.

Q. Let's go on. Now, you're not an expert on the actual size ranges of respirable fibers, correct?

A. I believe I said a number of times, I'm not a industrial hygienist or an expert on asbestos.

Q. Right. So you're not an industrial hygienist. You're not an expert on -- if we put a chart up there that said the different fiber levels of working with gaskets or packing, you're not an expert on any of those?

A. I'm not sure I understand what you're saying.

Q. Well, I think that's probably because you're not an expert on it, but I just need it for the record.

The air monitoring studies. You've never done any air monitoring studies yourself concerning asbestos, correct?
A. I've not done any air monitoring.
Q. Okay.
A. I have no opinion about it. That's what I said in my testimony.
Q. And you're not -- are you aware that Dr. Longo has indicated that respirable fibers are 1 to 10 micrometers, not this .5 that you've been talking about?
A. I think I showed the Court, Your Honor, where Dr. Longo says respirable is less than 3 microns. But if you look at Longo's -- Dr. Longo's reports and his testimonies over the years, the numbers vary dramatically. Originally it was that you could see particles from .01 to .05. And then it became .01 to 1 micron. Then it became .01 to 3 microns. And now you're quoting something 10 microns, but then it is aerodynamic.
I think his statement was, and I think it's consistent with what I read in the literature about this, is that, that was the range over which respirable fibers vary from .01 to 3 microns.
Q. And sir, we're going to try to move things along, but this is a quote out of the first document that I talked to you about.
Have you reviewed this where it talks about the dust lamp

being a simple qualitative tool for making fine particle clouds visible or enhancing the visibility of partial visible clouds? Have you seen this and reviewed this before? Do you disagree with this statement, sir?

A. Well, you know, it's -- first of all, you have to not talk about this in generic terms. It's a simple qualitative tool. So qualitative means that it is not quantitative. It does not, essentially, allow you to do a measurement and say, I can find out how much light that is coming out of these particles. So it's a qualitative tool.

And clouds and particles or enhancing visibility of parts of clouds. Yeah. I mean, if I would turn on a Tyndall lighting system here -- in fact, you probably have seen it, Your Honor, when the sun comes through the window and you have the parallel light from the sun, you sometimes can see a lot of light scattering from particles in the room.

And so, does that enhance the visibility? The answer is, yes. But that's not the question that I answered.

Q. Right. And you've made a very specific question about very small fibers where you basically taped them to something and put a light on them to see whether you could see them using a laser or a light source, correct?

A. That is the scientific way of solving a problem.

Q. And the scientific way that you chose to do that is, you used a 100-watt bulb in your study, correct?

A. That's part of the story --
Q. And Dr. Longo --
A. -- that's not the key point.
Q. Okay. Well, we're going to walk through that quickly.
But you used -- you would agree with me that you used 100-watt bulb in your study, and Dr. Longo used a 750-watt bulb, actual multiple lights in his study, correct?
A. In some of our studies that's what we used, yes.
Q. Well, in fact, the study that you've talked about here, it's 100-watt bulb, correct?
A. Yeah. We also used a laser.
Q. I know, but I want to talk about the bulb.
A. But you have to be careful. You're asking me specific questions, I'm trying to give you specific answers.
Q. Sir, when you used the lighting that you used the bulb, you used 100-watt bulb?
A. In some of the experiments we did.
Q. Okay. And instead of doing a large enclosure, you used a very small enclosure, correct?
A. Yeah. So, Your Honor, what is important is not the total amount of light that comes out of the light bulb. What is important is, is how many of those photons -- so you could actually think of light source as being a source in which the particles -- think maybe about it as tennis balls or something similar to that.

So the light source sends out 3 times 10 to the 18 of these particles out. They go over a certain area. What matters is, is how many of those ping pong balls or whatever they are, hit that particular target.

So it's the irradiance, which is the number of photons per unit area, per the raidum, which is just a technical term. It's not the total number.

And so because of the fact that we didn't have to look at the large area where we only look at a small object, in this case the fiber, it's sufficient that the intensity of the stream of photons that is incident on the fibers, it's the same as what was used in Dr. Longo's experiments, and that's what we did.

Q. And sir, if we did that same experiment that you did in 20 by 15 by 8-foot enclosure, wouldn't we see 75 to 100 million fibers of asbestos in there if we are doing a work-practice simulation? Or is that something you're just not aware of because you did your study in a small enclosure?

A. No. The issue is that, could it be possible that these bright spots that we see on the image on Dr. Longo's video, be the result of scattering from respirable particles in the range from 0.0 to 3 microns? And the answer to that is, no.

Q. I understand, sir. The question is, is you're not aware of how many fibers would be in a chamber like Dr. Longo's chambers or Mr. Boelter's chamber if we were doing a

work-practice simulation. You have no idea how many billions of fibers might be in that chamber, versus looking at one fiber bundle the way you looked at it, correct, sir?

A. No, it's not correct.

Q. Now --

A. Because I know what the density is that Dr. Longo claimed that he measured. I can multiply that in order to get it over a total area and so I can make an estimate of how many particles potentially that could be there, assuming that these measurements were correct, which I have no way of knowing.

Q. And sir, when you did your study and you used that 100-watt bulb, you're aware that there are standard procedures and they talk about using -- when you're looking at this Tyndall lighting and whether you can see fibers or not, they look at using bulbs that are a lot more powerful. In fact, what they recommend is 1,000- to 2,000-watt Tungsten halogen bulbs; you're aware of that, correct?

A. I think you missed the point. The point that I just explained to Your Honor was that it is not the total power. In this particular case, you might expect that someone said you want to use for a certain field that you have, a certain light source so that you get enough illumination. And so, you know, if you want to essentially illuminate this whole room, you need a lot more light than if you're actually sitting in a very small chamber and you want to read your light, or in your

airplane. So that's not the key issue.

The key issue is, what is the density of the intensity of the light that is incident on that scattering particle.

Q. And sir, prior to coming up with your experiment, you never read Dr. Longo's peer-reviewed article on his Tyndall lighting and his Gasket IV, did you, sir?

A. I think I've told you what I --

MR. HARRIS: I object to the extent that I don't think there's any article that's published on Gasket Study IV or his Tyndall lighting. That just is a complete misrepresentation of what he says.

BY MR. FROST:

Q. Did you review Dr. Longo's peer-reviewed article prior to doing your experiment?

A. I think I've given all the references that I reviewed, and I essentially addressed the question, and so that's what I'm really prepared to answer. So there may be lots of information out there in the literature, but that was irrelevant to what I needed to do.

Q. Dr. Longo's peer-reviewed study was irrelevant to your test?

A. I'm not aware that he has a peer-reviewed article, so...

Q. Now, sir, if your premise and test is correct, and if an individual is doing a Tyndall lighting demonstration, and we're not talking about using gaskets, but we're talking about

a product that is 100 percent asbestos, then everything you've told the Court right now that shouldn't be able to see certain things in certain lights, that should all apply, right?

A. The basic physics will apply, yes.

Q. Okay.

A. But, you have to be a little bit careful. And I've seen this particular article on Dr. Longo where he says, I take a bag with asbestos fibers and I can see it.

Q. Well, in fact, sir, we're going to play for the record Dr. Longo's demonstration using Tyndall lighting. This is a 100 percent chrysotile asbestos. 7-M asbestos. Do you know what 7-M asbestos is?

A. I'm not an expert on asbestos.

(Video playing.)

Q. Sir, I want you to take -- that's Dr. Longo pouring a bag of pure asbestos, 7-M asbestos chrysotile using the exact same format. You would at least agree with me, sir, that what we can see there, using 100 percent asbestos is the same types of things you said you couldn't see in the gasket study?

A. Maybe I didn't do a good job explaining what the situation was. But when I said, why can you see the blue sky. The particles in the blue sky, Your Honor, are smaller than a .01 micron. They are probably 100 times smaller than that. But there are 10 to the 23rd or so particles per cubic centimeter. And the light that goes through the atmosphere is

several, probably 10 kilometers long. And when you look at all of the scattered light, you can see the blue sky. But the scattering from each one of the particles is very small.

That bag, Dr. Longo could barely lift it. That bag is -- how much did it weigh; 25 pounds perhaps? So there are billions, and billions, and billions of particles in there and they together can scatter. There's absolutely no doubt. If you got enough particles there, and you have billions of trillions of them, you can actually see scattered light from that.

Now if that's 100 percent asbestos, I don't know. Because I don't know if there is anything else in the bag or if there's anything on the outside of the bag. But that's a completely irrelevant comparison with the question that I stated.

Because the question I stated and what he said could be done is, can you see an individual particle.

Q. Right. And I think that's where you and I have a disagreement. You want to deal with just a single individual particle. But what Dr. Longo is demonstrating is that there are fiber bundles, there's also large particles. And if you take something that's 100 percent asbestos, a bag of 100 percent asbestos, cut it open, pour it into a 55-gallon barrel with Tyndall lighting, you still can see things, correct, sir?

A. I said if you took one purely asbestos particle, and put it into the Tyndall lighting, you would see nothing. And so if you put billions and trillions of them, yeah, you see scattered light from it. But that's a very different thing than what he said before, and it is irrelevant to the question that I answered.
Q. And sir, how many asbestos fibers are there in, say, like a thimble?
A. In a what, sorry?
Q. Thimble.
A. I don't know what the concentration is.
Q. If it was billions or trillions, would that surprise you?
A. I don't really want to speculate on things that are not related to what I testified on. I'm here to help the Court, hopefully, to kind of get an opinion about can it be that these white spots in the video are caused by single or breathable fibers in that range from .01 to 3 microns, and the answer is no.
Q. And if there could be billions of fibers in that air, then you wouldn't have the answer to that question whether you could see it using Tyndall lighting, correct, sir?
A. I'm perfectly willing to answer a well-posed question that you come to me for and I will be able to investigate and I can tell you what's possible and what's not possible.
Q. So you don't know if there were billions of fibers in the

air, whether you could see them or not?
A. Could you tell me what the size is? What the density is? What the intensity of the light is? How the camera is connected to the optical system? What the magnification is? The polarization is? I'll answer your question.
Q. Okay, sir, so as we sit here today, you don't have an answer as to whether there were billions of fibers in the air, whether you could see those using Tyndall lighting, correct?
A. I think I've given my opinion about what you can and cannot see. I just did it a few minutes ago. If you have billions and billions of them.
Q. And I thought your answer was you could see them?
A. You can see them if you have billions and billions of particles -- ultimately, I mean, what I said was, that if the concentration is off by three orders of magnitude, then you probably could see it. So if you have billions times more, yes, you will be able to see scattered light coming from them.
MR. FROST: And Your Honor, we would offer as ACC 3692, the Environmental Protection Agency Region 8 SOP Libby 02, which was referenced.
We would offer as ACC 3691, The Methods for Determination of Hazardous Substances, that was referenced.
We would also add as ACC 3849, a copy of the PowerPoint.
And then as 3850, a copy of Dr. Longo's video that

was played.

Otherwise I pass the witness.

MR. HARRIS: I've got objections to this. Do the documents that they're offering, those I think would fall under the learned treatises and they're not admitted into evidence, and so I don't -- I think those documents are objectionable because they're hearsay.

MR. FROST: Your Honor, just to clarify that. I'll offer those pursuant to Rule 104 purposes.

MR. HARRIS: I don't know which PowerPoint he's referencing there.

MR. FROST: Just the slides that we used.

MR. HARRIS: Oh.

MR. FROST: So they're marked for the record.

MR. HARRIS: So they're marked for identification purposes. Sure.

(ACC Exhibits No. 3691, 3692, 3849 and 3850 were received into evidence.)

THE COURT: Mr. Guy, do you have questions?

MR. GUY: Yes, Your Honor. May I examine the witness from here?

THE COURT: Yes, sir.

CROSS-EXAMINATION

BY MR. GUY:

Q. Dr. Hesselink, good afternoon.

A. Good afternoon.
Q. My name is Jonathan Guy. I represent the Future Claimant's Representative, Mr. Grier. I have a couple questions for you.
A. Could you maybe go to the other microphone?
Q. Sure. My first question was going to be why did you ever leave The Netherlands, my favorite place? Let's ask you something substantive.
A. I will tell you the story some day.
Q. Well, at least you're in Palo Alto.
Have you ever testified at trial concerning Garlock's gaskets where Dr. Longo testified at trial also?
A. I mean, I only have testified in a prehearing once.
Q. So you've never testified where both you and Dr. Longo are testifying to a jury, correct?
A. No.
Q. Have you ever testified at trial concerning a Garlock gasket? I think the answer's no, but just so we're clear on the record.
A. Yes.
Q. Now you said before that you're not a hired gun, and I'm absolutely not suggesting you are. But in your world, and this was your phrase, what's a hired gun in the expert world in your opinion?
A. Well, I think, Your Honor, I gave some examples of that.

I've been in one case, or actually several cases with a colleague of mine, and he essentially was espousing technical matters that were in direct conflict with articles that he's written. This book -- two books that he had written.

And so there was a dispute about a definition. And so he took a position that was counter to things that he would have never done in his scientific career. And it was apparently in the interest of the case that he made those comments. And to me, that is an unacceptable situation. I'm not prepared to do that.

So I haven't really thought about what a hired gun in this world is, but I would think that that's one characteristic I would ascribe to it.

Q. I think that's a great definition. Thank you, Dr. Hesselink.

THE COURT: Thank you.

Anything else, Mr. Harris?

MR. HARRIS: Just a couple of things, Your Honor.

REDIRECT EXAMINATION

BY MR. HARRIS:

Q. I'm going to go back to this business about the physical diameter of the fiber versus the aerodynamic diameter of a particle.

Mr. Frost flashed up some testimony, I believe from the Grigg trial. And I think you were -- Dr. Longo was saying the

diameter's 1 to 10 microns. Do you remember that?
A. Yes.
Q. And so this is actually the testimony that Dr. Longo gave in his deposition in this case where he was talking about the physical diameter of the fibers that are maximum for respirable, and he actually says 3 microns.
Is your understanding that when we speak of respirable particles being larger than 3 microns up to 10 microns, that that's in connection with being the aerodynamic diameter, which is an entirely different calculation than the physical diameter?
A. Yes, Your Honor. I think I said that a couple of times. It is the physical diameter that we are talking about here that is 3 microns.
Q. All right. This is what Dr. Longo's position was when we deposed him in this case. Maybe he's changed, I don't know that.
Let's talk about the 100-watt bulb versus the 1,000-watt bulb or higher density. Can you explain to us again why is it that it doesn't matter that you used 100-watt bulb in your laboratory, versus the 750- or 1,000-watt bulb that Dr. Longo used in his chamber?
THE WITNESS: Would Your Honor allow me to go to the board again?
THE COURT: Yes.

THE WITNESS: Your Honor, if you look at this part of the setup. This is the light emitting portion of the light source. It typically sends out light in all directions or at least into a cone. This is essentially referred to as spherical (indiscernible), so it's a portion of the sphere. Then there is a lens. And the lens essentially then focuses or collimates the light in this particular case.

As you can see, there's only a very small fraction of the light that will pass through this pinhole. So if this is actually a plate that only has a very small hole in it, say 10 microns, all these photons that come from the light will not go through that hole, and so the light that is delivered at this point, is only associated with that small fraction of the photons that pass through that aperture. All of these are essentially wasted.

Now, why didn't we use another light source? Well, this is one that we had available and that was suitable for the case. But if you look at the number of photons or the intensity of the light that comes from this small aperture and that hits the target, the number of photons or the intensity of the irradiate as this is referred to as the number of watts per square meter per steradian is similar to what Dr. Longo had.

So if you actually wanted to see the larger area, then you would also have to have more power in order to be

able to come to a similar configuration. But since we're only doing the one scattering from one particle, we actually set it up so that the experimental conditions were the same as was Dr. Longo.

Q. And did you calculate the light density to make sure that what you were doing was right in line with what Dr. Longo was doing?

A. Yeah, in fact we did a little bit more, Your Honor. We actually also put in a equation that essentially allows you to scale, based on the intensity and magnification and other parameters that are in the typical setup, so that you actually can work out whether or not you should have a stronger or weaker light source, or what you can use for a specific setup.

Q. All right. This is just the laser graphic if you needed that.

I would like to close, Dr. Hesselink, by going back to something Mr. Frost raised. There was this case earlier this year called Grigg that was pending in Alameda County, Oakland, California; is that your understanding?

A. Yes.

Q. You testified at a hearing that was to determine whether Dr. Longo could display his Tyndall videos to a jury; is that correct?

A. That's correct, Your Honor.

Q. You were actually engaged by Owens-Illinois to testify at

that hearing, correct?
A. That is correct, Your Honor.
Q. You testified, Dr. Longo testified; is that correct?
A. Dr. Longo testified via video link.
Q. And the Court then decided to exclude Dr. Longo's videos so they would not be displayed to the jury, correct?
A. That was my understanding. That's what I was told.
Q. I've displayed the Order. And so you did not come and testify at the trial; is that correct?
A. That was not necessary.
Q. All right. Thank you, Dr. Hesselink -- wait a minute.
Let me just ask you, there was that video that Mr. Frost displayed of the 7-M chrysotile studies; is that correct? Do you remember that being part of Dr. Longo's report?
A. Yeah.
Q. Now again, why is it that 7-M chrysotile or the pouring of that chrysotile would scatter sufficient light to be visible under the Tyndall lights? It had to do with concentration; is that right?
A. Yeah, I think I explained to Your Honor that was the case. I mean if you -- so this is the experiments that I did is to determine what is the scattering cross section as it is called, Your Honor, from one single particle.
And so you have one particle, it scatters a little bit of light. I get a second particle, it scatters a little bit more

light. If I get a third particle, it scatters a little bit more light.

If I fill this whole volume with literally trillions, and trillions of particles in there, then that whole cloud of particles will scatter a whole bunch of light.

And so what you see in that and what you saw is more or less uniformed totally saturated on the camera white image, which is indicative that you have a very large number of very small particles, which is totally different from saying that the bright spots that I have on the video that Dr. Longo showed, that those are responsible and visualized for particles that are in the range of .01 to 3 microns. That's a completely different problem.

Q. Right. And the concentration of pouring a whole bag of chrysotile is going to be much, much higher or is the magnitude higher than the concentrations that Dr. Longo reported; is that correct?

A. Not orders of magnitude. Okay. There are about 1 micron, let's say. And so that means there is 1,000 by 1,000 by 1,000, so that's a billion in roughly this size. Plus this was a big bag, and so I don't know what there is. So there is billions of these particles in there.

MR. HARRIS: Thank you, Dr. Hesselink.

THE COURT: Thank you. You can step down.

MR. FROST: Your Honor, just one question briefly.

THE COURT: Okay.

RECROSS-EXAMINATION

BY MR. FROST:

Q. On that last issue, Doctor, are you aware that that exact same -- not that Dr. Longo's videos have been allowed to be used in Alameda County, particularly in Bissett case, is that something you're aware of?

A. I'm not a legal expert. I can only tell you what I did.

MR. FROST: Okay.

THE COURT: All right. Thank you, Dr. Hesselink. Appreciate your input.

Why don't we take a break now and then what do we have left we're going to try to do today?

MR. HARRIS: We have Mr. Boelter that is coming back to testify for just 10 minutes, 15 minutes. Then after that I believe the Debtors will call David Glaspy to testify.

THE COURT: Okay.

MR. HARRIS: He's a lawyer witness.

THE COURT: Right. How about Henshaw, is he going to testify?

MR. HARRIS: No, he's not going to testify today.

THE COURT: And somebody named Behrens?

MR. HARRIS: I don't believe he's going to testify today either.

THE COURT: Okay. All right.

MR. CASSADA: So just in terms of housekeeping, I know that we have to sort of break camp and get out of here today. I don't know what Your Honor had in terms of timing for stopping --

THE COURT: I was going to go till 5:30, which is probably the latest we practically can go.

MR. CASSADA: So we can plan on going with court time till 5:30 and then clearing out after that.

THE COURT: Clear out as much as you can and come back in the morning to finish up. I thought we had tomorrow, but turns out Judge Conrad is going to be in here tomorrow.

MR. GUY: We're not coming back tomorrow.

THE COURT: No, I know that. I thought you had tomorrow to clean up or to get your stuff out of here.

MR. CASSADA: There's a second issue, and that is from time to time we have planned on offering documents and doing some housekeeping, and I think that's not going to be possible, obviously, within this timeframe. We'll speak with one another and coordinate how we'll do that.

THE COURT: All right.

MR. FINCH: One other housekeeping issue, Your Honor. We have provided to Garlock the printouts of the slides, PDF of printouts of the slides we used with our Direct -- with our experts on Direct. At least for the medical science witnesses, what we got from them was that, but

it was printed on six pages to a page and it's just too small to read. So I would request that they give us the exact same that we gave -- same thing that we gave them, which is for every slide that's shown, it's not six pages to a page, it sits on a full size page so you can see what it is you're actually looking at, not little tiny boxes which you need a magnifying glass to see, since that's effectively what they presented to the Court was not the magnifying-size stuff but the big stuff.

THE COURT: You got the Tyndall light.

MR. FINCH: I do have the Tyndall light, but the Tyndall lighting is --

THE COURT: Just scatters everything.

MR. FINCH: That's right.

THE COURT: How about giving him a full page.

MR. HARRIS: We don't have a problem. I think they can see everything. There's nothing that's illegible, but we don't have a problem. We will offer those as a demonstrative.

THE COURT: Plus give them a copy.

MR. HARRIS: We'll do that, Your Honor.

THE COURT: All right. Let's just come back at 4:00.

(A brief recess was taken in the proceedings.)

MR. HARRIS: At this time we call Fred Boelter.

FREDERICK WILLIAM BOELTER,

Being first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. HARRIS:

Q. Please tell us your name.

A. Frederick William Boelter.

Q. Welcome back, Mr. Boelter.

I wanted to ask you -- I asked you to come back to testify. Dr. Longo testified a couple of Mondays ago, and testified to some things that I wanted you to address, specifically with respect to Tyndall lighting.

But before we get into that, I just wanted to touch on the thing you saw at the very end of the cross-examination of Dr. Hesselink, and that is the 7-M chrysotile study that Dr. Longo produced in rebuttal to Dr. Hesselink's report earlier. You've taken a look at that; is that correct?

A. Yes, I have.

Q. And you discussed that at your deposition?

A. Yes.

Q. Can you tell us about 7-M chrysotile. Are you familiar with that product?

A. Yes.

Q. Can you tell us something about how much of 7-M chrysotile is actually asbestos and what the fiber size distribution is?

A. 7-M is a grade of chrysotile which involves smaller

sizes. And the -- 100 percent 7-M is not 100 percent asbestos. It is -- it will involve other minerals that are part of the geologic formation from which the asbestos was extracted. It would include silicates, it would include mica. It might include other minerals as well as.

Q. There is a grading for 7-M for different types of chrysotile; is that correct?

A. Yes.

Q. And 7-M is the name of one grade; is that right?

A. That's right.

Q. You produced a document at your deposition that discussed the grading system for chrysotile; is that correct?

A. Yes.

Q. Is this the document?

A. It is.

Q. Can you tell us what is significant about this document?

A. What the grading process does is allows for different mines to meet specifications for sizes. The longer size fibers that would be of a lower grade, in numerically a lower grade would be longer and thus would be used for weaving, for example. Whereas the shorter fibers would be fillers and used for other purposes.

Q. There's a chart in this document that talks about how the different grades are graded. Can you tell us what this information provides us or what this chart tells us?

A. Sure. Fundamentally the way the grading is conducted is, the asbestos ore is crushed and then milled at the mine, and then run through a series of -- basically three screened pans, or screened layers, and then the fourth layer would be a pan.

So the grading process is one where the material is passed over the screens. The smaller materials fall through the larger screens. So the two-mesh is a larger opening than a four-mesh is larger than a 10-mesh is larger than a pan.

So the larger fibers and larger particles will be retained in the higher mesh. And so the way you read this chart is, if you are looking for longer fibers or larger elements, you would be looking to a group that has more retained on the two-mesh, and less retained on the pan.

And so as you look down the page, for example, at the 7-M, it says that there is at least 1 percent or 1 ounce --

Q. One ounce out of 16 is that --

A. That's right. One ounce out of 16 that is retained on a 10 mesh, and a 10-mesh opening is about .053 inches of opening.

Q. Is that what this chart indicates, this other chart that's in there?

A. That's right.

Q. So 0.053 inches is about what size?

A. About 1.3 millimeters.

Q. So 1 ounce -- I'm sorry, 1 ounce of the 7-M chrysotile or

chrysotile that qualifies as 7-M is going to be at least 1.3 millimeters?
A. That's right, 1 out of 16 ounces, that's correct.
Q. And 1.3 millimeters is much, much larger than the 3 microns that we've been talking about earlier; is that correct?
A. That's right. 1.3 millimeters would not be classifiable as respirable. And it's also a -- the asbestos is a portion of the 7-M, it's not 100 percent asbestos.
Q. Okay. And so Dr. Hesselink explained why we could see so much dust of 7-M chrysotile under the Tyndall lights because the concentration, but also some of these particles are real large?
A. Sure. They're quite large. You can see them. You can hold the materials in your hand. You can see the particles and clearly they're much larger than a respirable size.
Q. You don't need Tyndall lighting to see the 1.3-millimeter particles; is that correct?
A. No, you don't.
Q. Okay. So I wanted to talked to you about Tyndall lighting. Dr. Longo presented his Tyndall lighting demonstration from the Gasket Study IV. Are you familiar with it?
A. I am, yes.
Q. I showed him one of his videos from the spiral wound

gasket study.
(Video playing.)
Q. And this video looked very similar to the Gasket Study IV video. From an industrial hygiene point of view, can you assess what the occupational exposure is to asbestos from watching Tyndall lighting like this?
A. No. That's one of the challenges is, the information visually that you obtain is not helpful. You ultimately have to characterize analytically what's present in order to understand exposure. Tyndall lighting really has no useful application in industrial hygiene.
Q. So Dr. Longo testified the results from the spiral wound study that had this video, was actually -- the results were below the OSHA standard. What is the OSHA standard today?
A. It is 1/10th of a fiber per cc as averaged over eight hours, or 1 fiber per cc as averaged over 30 minutes.
Q. Okay. And so .1 fibers per cc is an eight-hour time weighted average is the OSHA PEL; is that correct?
A. Correct.
Q. I want to show you what the committee's expert Mr. Beckett said.
(Video playing.)
(Video stopped.)
Q. So those exposures that we would see under the Tyndall lights in the spiral wound video would not be significant?

A. That's correct.
Q. From an industrial hygiene point of view?
A. That's correct.
Q. Have you prepared a demonstration of Tyndall lighting as part of your work in looking into these experiments by Dr. Longo?
A. Yes, I have.
Q. What did you do?
A. What I did was, I took a number of common activities that I would assume most people have done, such as pulling tissue out of a box, or pouring breakfast cereal into a bowl, or things like that, and subjected them to the Tyndall lighting techniques and videotaped them.
Q. So what are we seeing here?
A. This is me opening a new box of tissue. And what I'm going to be doing is pulling the tissue out of a box with Tyndall lighting illumination. And what you see is a dramatic effect associated with particulate that is in the air related to an activity of pulling tissue out of a box.
Q. So very little particulate, but it's still detectable by the Tyndall lights?
A. It's a dramatic look under Tyndall lights. If you're asking me if I were to quantify it, would it have been significant as an airborne concentration? I'm not sure what you're asking.

Q. Well, it was a small amount of airborne particulate?
A. No. My assessment in looking at this screen, it was quite significant. This is me pouring a box of breakfast cereal into a pan. And at least on my screen there's quite a bit of visual dust that is created in the process.
Q. Did you --
A. But I don't think most people would think of it as dusty activity.
Q. But that's under the Tyndall lights?
A. That's correct.
Q. Then did you also do a demonstration with respect to the activities that Dr. Longo was engaged in by using power equipment on a flange?
A. Yes. What I did was, I took a brand new cast iron gate valve. This is right from a supply house, and a new wire wheel, radial wire wheel on the same tool that I used in my Coltec studies, which is about a 1,250 RPM electric drill. And what I'm doing is taking this wire wheel at that RPM, to the face of a new valve. So it's a metal on metal contact. And Dr. Longo had said if that were done, there would be nothing visible under Tyndall light, and that's what I sought to look at. So this is the effect under Tyndall light, and there is quite a bit of dust being generated from the activity.
Q. Do you know what that dust is?

A. I do not. It could be from the flange, it could be from the wire wheel, it could be from other particulate. I don't know what it is without quantifying it. That's under the Tyndall light.
Q. We've also seen this video before. Do you have an understanding of what this represents?
A. Yes. This is Dr. Longo on the left using a wire brush on a flange surface, and on the right is -- I believe this is John Spencer using a wire brush on a new flange -- new cast iron flange surface. And again, there's visible dust that's being generated by the process. You just don't know what it is under Tyndall light, nor do you have any ability to quantify it.
Q. And so he's doing -- you used the power wheel on the flange face, he's using just a hand wire brush?
A. That is correct.
Q. Do you know what this dust is just by looking at this?
A. No, you wouldn't know visually what it is.
Q. So we discussed this briefly with Dr. Hesselink, and I wanted to ask you about this. Dr. Longo's testimony in this court was that if a product has 10 percent asbestos in it, then it's his opinion 10 percent of the dust that's seen under the Tyndall light would be approximately 10 percent. Have your demonstrations or your look at this, does the work that you've done support this type of conclusion?

A. No. I don't think there's any support for drawing this conclusion, quite honestly, from either the work that Dr. Longo did, or from the work that I've done or that other people have done on the subject.

Q. What information do you have that would be useful for us to understand that?

A. The collection of the air samples themselves that are used to quantify what is in the breathing zone of someone who is performing an activity.

(Video playing.)

Q. All right. There is another video that we have -- I don't think we've seen this one before. This is from Dr. Longo's Gasket Study IV.

A. Yes, this is --

Q. The first flange assembly; is that right?

A. This is the first flange assembly of the day, and the first flange assembly of this particular sequence of tests that are being performed.

What's significant here is, this is the disassembly of a flange. There is clearly visual dust that is being generated, it's falling onto the surface of the table. When the air impact wrench is being used, you can see visually that there's dust being blown around, but the Tyndall light is not on at this point.

What's significant about this is, clearly there's dust

being generated. It is being dispersed. We don't have the Tyndall light on. We can't make a visual assessment of its significance.

And therefore when the Tyndall light is used later on, we don't know how much of what we're looking at is related to the activity of wrenches, or there's a pre-existing condition from this dust, for example, coming off this disassembly at this first step where that material could be paint, it could be sandblasted material. You could see the dust falling. But it's clearly not activity related to the gasket, and therefore it's not gasket-related dust.

What he's going to be doing now is using a hammer to -- this is another angle of the same activity. And eventually what will happen is that a hammer will be used to separate the flanges. Here you can see it and you can see the dust being kicked around. And there's no -- what we might call a background Tyndall display to understand visually what that looks like.

Q. Dust could be -- I mean, we don't know what is that dust; is that correct?

A. We don't. I think there's a high degree of confidence that it's not asbestos.

Q. Dr -- or Mr. Beckett, the committee's expert commented on Tyndall lighting in his deposition. Do you recall that testimony?

A. Yes, I do.
(Video playing.)
(Video stopped.)
Q. Do you agree with that, Dr. Boelter?
A. I do agree Tyndall light has no application in industrial hygiene.
MR. HARRIS: Thank you. I pass the witness.
I should offer some exhibits.
Your Honor, we have marked as Exhibit GST 15528, Mr. Boelter's CV. We offer that exhibit.
THE COURT: All right.
MR. HARRIS: We also offer the demonstrations in his testimony today as GST 14740a, which is his demonstration. And GST 15456a, which is the split-screen demonstration that we saw.
MR. FROST: Your Honor, we have no objection to those as long as they're offered for the same purposes that we offered our videotape.
THE COURT: Okay. I will accept them as such.
(Debtors' Exhibits No. 15528, 14740a and 15456a were received into evidence.)
MR. HARRIS: Then from his demonstration last week or two weeks or so ago, he showed a video of his gasket removal projects that he's worked on showing the difficulty in removing the gaskets. We've marked that as GST 15527a and we

offer that for the same purposes.

MR. FROST: No objections.

THE COURT: All right.

MR. FROST: The same issues.

THE COURT: Submit all of that.

(Debtors' Exhibit No. 15527a was received into evidence.)

MR. HARRIS: With that, Your Honor, we pass the witness.

THE COURT: Okay.

CROSS-EXAMINATION

BY MR. FROST:

Q. Good afternoon, Mr. Boelter. How are you?

A. Good, thank you.

MR. FROST: Well, your afternoon's going to get a lot better. I have no questions for you.

Your Honor, with that, the science team would like to thank the Court and do the line shift to all the other folks and thank the Court for its hospitality and thank the court staff. And Your Honor, with that, may Mr. Finch and I be released?

THE COURT: Yes.

MR. FROST: Thank you, Your Honor.

MR. FINCH: Thank you, Your Honor.

THE COURT: You're welcome.

You can step down. Thank you.

THE WITNESS: Thank you.

THE COURT: I was kind of liking the baseball analogy better, because we even had a switch hitter in here the other day.

MR. FINCH: Well, it's a relief pitcher, Your Honor, Mariano Rivera coming in.

THE COURT: All right.

MR. SWETT: Good afternoon, Judge.

THE COURT: Howdy.

MR. KRISKO: Your Honor, the debtors will call David Glaspy.

DAVID MICHAEL GLASPY,

Being first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. KRISKO:

Q. Good afternoon, Mr. Glaspy. And welcome back to the courtroom. You're one of the witnesses that has been seen by this court before.

If you could please just state your name for the record.

A. David Michael Glaspy.

Q. Okay. Could you briefly describe for the Court why Garlock has called you to testify at this point in the case?

A. My understanding is to cover three areas. One is to offer my opinion regarding the exposure evidence it would have

had on Garlock's trial risk, settlement values, and defense costs.

Second issue was to address a few things that were raised last week by attorney David McClain.

And thirdly, my opinion about some changes in the law in California and procedures that would have an effect upon asbestos cases.

Q. Okay. Thank you. I know that the Court has heard Mr. Glaspy's background before when he testified in March of 2011, but I think it would be useful for us to review that for Your Honor.

First, Mr. Glaspy, where do you live?

A. Pleasanton, California.

Q. What do you do for work?

A. I'm an attorney. I've been a licensed attorney for 33 years, and I limit my practice to civil trials and primarily almost exclusively of defending companies of people that get sued.

Q. And before what courts are you admitted to practice and in what jurisdiction?

A. I was admitted and licensed to practice in the State of California since 1980. And I've been admitted to all the districts -- federal court districts in the State of California.

Q. What's your educational background?

A. Graduated 1977 from the University of Santa Clara with a degree -- a Bachelor of Science degree in commerce business, and three years later from University of Santa Clara with a Juris Doctorate from the law school.

Q. All right. Can you describe in some more detail the nature of your law firm?

A. Well, the firm named Glaspy and Glaspy, and originally stood for my father and myself. He passed many years ago, and currently two of my brothers and my sister are lawyers there along with about 12, 13 other attorney.

Q. Okay. How long has asbestos litigation been a part of your practice?

A. Well, since March of 1981 when I was -- had been a licensed lawyer for all of three months. I received my first five Garlock cases that were assigned to our firm by Aetna Casualty and Surety Company. And since I was on the bottom totem pole they came to me.

Q. Okay. Can you describe how your asbestos litigation practice developed from there?

A. Well it picked up steam slowly, and eventually about 1984, about three, four years later, the powers that be, parent company of Colt Industries took over the defense and had some arrangement with the insurance carrier, and at that time they came out and interviewed me, and I was appointed co-national counsel along with Rick Goldfein out of

Philadelphia.
Q. As co-national counsel, what were your responsibilities?
A. My responsibilities were to oversee the litigation, Garlock litigation in all the western states, and shortly thereafter also included some of the southern states, Mississippi, Alabama, Arkansas, what have you. It was our job to oversee litigation, and to be in charge of settling all the cases in all those states that we're in charge of. And if a case was coming to trial, to direct the preparation and if needed to go try the case.
Q. Okay. And that role began in 1984?
A. Correct.
Q. Okay. When did that role change, if it did?
A. Well, it changed in the -- about 1994, about 10 years later, Garlock went to a regional system that is cutting the country in quarters. I was still in charge of the west, but no longer was I in charge of Texas or the southeast, so it was just the west.
Q. Was it basically the same role just with a different area of responsibility?
A. That is correct, just a smaller region.
Q. Okay. As national counsel or as regional counsel, however your role was described, did you ever have any input into the development of Garlock's strategy?
A. It was -- I participated in that constantly every year

from 1984 through 2010.

Q. Okay. What in terms of your supervisory responsibilities, you've touched on those a little bit. Can you add any detail in terms of your responsibilities for trials and settlements?

A. Well again, some states had very little litigation some had a lot. If in fact cases were coming up for trial, it was my job to contact the plaintiff's attorney, to open up negotiations, and to get the cases settled. If we couldn't get the cases settled for what we felt was a fair number, then it was my job to prepare the case for trial and to go try the case.

Q. Okay. Now you, during your time you were involved in trials directly; is that correct?

A. Hundreds of trials.

Q. Okay. Can you describe your trial experience for the Court?

A. Again, lots of trials would start, especially back in the '80s and all through the 30 years I did this, you show up and plaintiff's counsel would accept the offer that was on the table. So you basically show up, set up your show, get ready to try the case, they see you're serious, they take your money and go back home. That happened hundreds of times.

If we got there and they didn't accept the offer that was on the table, then we had to try it, and I personally tried 33

cases to verdict.
Q. So 33 for Garlock alone?
A. That's correct. I've tried cases for other defendants, yes.
Q. How many total would you say, cases you tried to verdict?
A. It's -- well, it gets in the range of 65 to 70.
Q. Okay. And I should mention, you prepared some slides to assist the Court in understanding your testimony today; is that correct?
A. Yes.
Q. Okay. Can you add some more detail in terms of describing to the Court your experience in settling cases in terms of the numbers of cases that you've overseen the settlement of, et cetera?
A. Well, I don't know the exact number, but I know it's well over 25,000. The reason I know that because those are just cases that were in California that ended up being resolved over the years. Early on there were obviously hundreds and thousands of settlements in groups. The number added up pretty fast. But it's somewhere between 25,000 and 50,000.
Q. In the course of settling those cases, did you provide advice and opinions to your client?
A. It was my job to evaluate the case, and give my client the best recommendation I could as to the settlement value of that case versus having to try it.

Q. Okay. Do you have other asbestos clients besides Garlock?
A. Yeah. And very, many -- actually, and it's changed over the years, and they come and go, obviously. But currently it's about 35.
Q. Without naming any clients, can you describe for the Court generally the kinds of asbestos defendants that you represent?
A. Primary were like Garlock manufacturers. You have suppliers of products, all the way down to wholesalers to retail stores are sued for having supplied a product. There are premises folks, contractors, California there's at least five different home builders that are sued in asbestos litigation regularly for just building homes. It's pretty much anybody can get sued -- any company can sue for asbestos, I've represented, not everyone, but I'm talking about every different category.
Q. Every different kind of defendant, manufacturer, premises owner, equipment manufacturer.
A. Contractors.
Q. Contractors?
A. Yes.
Q. How would you describe your practice generally, both in terms of the asbestos work and the other aspects of your legal practice today?

A. Today it's probably about 40 percent of what I do.
Q. Today asbestos litigation is 40 percent?
A. That's correct. It used to be about 60 to 70 percent when Garlock was still in the arena.
Q. Okay. So even after Garlock's bankruptcy, you've continued to -- have you continued to practice in the asbestos litigation area?
A. I have. And when that -- obviously when I became available, some other defendants decided they might want to use my abilities, so we added a few.
Q. Okay. Are you familiar with the substantive and procedural laws that impact asbestos claims?
A. I am, and I have to stay on top of that on a monthly basis.
Q. So you continue to monitor those laws, those procedures, the administration, et cetera, in the context of your practice?
A. Very closely.

MR. KRISKO: Your Honor, we would tender Mr. Glaspy as an expert in the assessment and evaluation of asbestos claims, in assessing trial risk, the impact of evidence on trial risk, and costs, and settlement values, and evaluating the extent to which laws and procedures would impact defense of asbestos claims.

MR. SWETT: Your Honor, we will reserve our

objections to his purported expertise until the time of post-trial briefs.

THE COURT: Okay. Accept him as such. Proceed.

MR. KRISKO: Thank you, Your Honor.

Q. Mr. Glaspy, could you give the Court an overview of the opinions you intend to offer here today?

A. Yeah, sort of a repeat of what I already said. But the primary opinion is about the exposure evidence that I have the ability to review regarding some specific cases, and what the effect that would have had on Garlock's defense costs, trial risk and settlement values.

Q. Okay.

A. And then the other issue again, as we talked about, is the changes since the filing in 2010 that takes place in California that affected the asbestos litigation.

MR. KRISKO: Thank you. Your Honor, the nature of Mr. Glaspy's testimony is going to touch on some cases that have been designated as confidential. We would ask that as we go into this testimony, that the courtroom be cleared of all persons who are not subject to the confidentiality orders of this Court.

THE COURT: Are you ready to do that now, or do you have something you can do before we have to do that?

MR. KRISKO: I can proceed for a couple minutes. It does become integrated at that point, Your Honor --

THE COURT: You just tell me. Let's go as long as we can without having to --

MR. KRISKO: Very well.

Q. Mr. Glaspy can you -- do you have an opinion about whether disclosure of exposure to asbestos products would have impacted Garlock's defense costs, trial risks or settlement values?

A. Yes, I do.

Q. What is that opinion?

A. My opinion is, after having reviewed those materials, that if that information had been available to me as the trial attorney representing Garlock in those cases, it would have greatly reduced the trial risk, the settlement values and the costs. And my opinion is, it would have reduced it back to where it was before the bankruptcy wave in the 1990s, those values.

Q. Okay. Without naming any specific cases, can you describe for the Court the nature of the materials that you reviewed?

A. Yes. I reviewed materials from several law firms, including their written discovery responses, trust claim forms, ballots, and those 2019 forms.

Q. Okay. In talking about your opinion, can you describe for the Court the basis for your conclusion? You've identified several items here in your slides, if you could

detail --

MR. SWETT: Your Honor, I have an objection. I don't believe this expert included in his report anything concerning 2019 statements.

MR. KRISKO: Your Honor, he's not going to be offering opinion on 2019 statements. He just reviewed those in the context of developing his opinion.

MR. SWETT: Thank you.

BY MR. KRISKO:

Q. Please proceed, Mr. Glaspy.

A. As I testified in 2011 in this case, over my 30 years of defending Garlock and other asbestos defendants, it is -- it became obvious to me it was imperative that you had to tell the jury up front right away what was the cause of that plaintiff's mesothelioma.

And the reason I say that, jurors are human beings, even in Los Angeles, and they want to know, they need to know why that person's dying. They have this question in their head. Once you address that issue, once you give them the basis for what's caused the disease, then they are much more receptive to listen to the evidence about other products and what have you. So that's -- that's just the most crucial point.

So what happens, and sitting here a couple days the last few weeks listening to the people testify, there's been reference to the chrysotile defense, in reference to the

low-dose defense. Those are just labels, and they really -- there's nothing you can pull off the shelf and say here's this defense. It's much more intertwined and a bit more complicated than that.

Every case that I tried for Garlock, the first issue as I said, is to show the exposure to the amphibole-containing insulation product as the undisputed cause of disease. It's undisputed. Plaintiff's experts will give that to you.

So -- and to do that, the first thing I would do is point to the sheer volume. I'm sure you've seen photographs of insulation on pipes compared to hold up a gasket. You also have the testimony from your experts about tons of insulation on board ships, in the shipyard and refineries and power houses, versus a few pounds of gaskets. So sheer volume is the first, basically three pillars. That's the first issue you address.

Then you talk about the releasability, as I call it. I think that's been referred to here as the low-dose defense. But what you're showing is, that that volume of insulation is giving off thousands of fibers per cc. And again to use the plaintiff's own experts, people like Longo who admit that the Harries' articles, talking about thousands of fibers per cc, is an authoritative article and a very well done study.

And you come in and you are talking about .00 something for gaskets. The orders of magnituge, it's millions of

difference. So you have more volume, and you have a lot more coming from it.

And then the third prong has been referred to here, I think, as the chrysotile defense. Now it's a misnomer in my mind because you're not -- you don't need to prove to anybody that chrysotile can cause meso. And I never set out to do that with a jury, because it's a very complicated issue, as I'm sure the Court has found out here.

But the plaintiffs' experts will always admit that chrysotile is 100 times, or 200 times less toxic than the amphiboles.

So you do the math on this, you take the board, there's about 2,000 pounds per ton. So you got 10,000 to 1 fiber per cc, or 1 fiber per gasket. Multiply that by 10,000 times more fibers released. And again by 200 times more toxic. And it's billions and trillions to one. It just puts it in the context that there's no way that that gasket could be the substantial factor in having caused the plaintiff's disease.

Q. So is it fair for us to say based on your description, that you see Garlock's defense more broadly and wouldn't characterize it as -- in separate ways?

A. No. You can't cookie cutter it like that and pull it off the shelf. It's everything. And obviously if you look at that -- those three pillars, if you take away the amphibole insulation product, you're left with virtually nothing as a

defense.
Q. Okay. We've heard some testimony about a term that I think you used in a deposition called "the idiopathic defense". Can you explain to the Court what you might have been talking about there?
A. As again, that's another misnomer. Idiopathic is a medical term and I don't profess to be a medical expert. But us lawyers on the defense side have referred to this alleged defense as "the idiopathic defense". And that is, if your client sued and you haven't developed evidence about other exposures, you basically have to tell the jury that it wasn't your product, it just happened because.
That's what the jurors don't want to hear. They don't want to -- they just don't want to know -- subconsciously they're thinking, this could happen to me. I live my life, I don't smoke, I don't drink, and I can still get cancer. It's very unsettling. It's not really a defense. That's why I think it's a misnomer. If that is the defense, then you're really walking in with no defense.
Q. When you use that term in your deposition, did you intend to make any comment on epidemiological studies or models that other experts may have been looking toward?
A. Absolutely not. I was just referring to a phrase I've heard from other defense attorneys.
Q. Okay. You identify Garlock's trial record as part of the

basis for your opinion. Can you explain why you've done that?
A. Yes. I explained the defense that I've been using or had used for 30 years, I still use it for other clients. And up until about oh, late '90s, I believe it was 19 to 1. It was fairly successful.
Q. What other aspects that led you to your conclusion you talk about -- could you review those with the Court?
A. Well, I'm sure you've heard about the bankruptcy wave. I know I sat here and listened to some of that. That was certainly a time when things changed in my world, in the trial world on the ground, in a place like California, Los Angeles. The companies were gone, they'd gone into bankruptcy, insulation companies. But we didn't see at first, the identification going away. But with time it began to happen. And it did not happen with every firm. There were some firms still disclosed everything, and some firms quite frankly disclosed absolutely nothing. But it took time. It didn't just happen the next day, it was -- it developed over a few years.
Q. The firms that you say were the ones that did not identify everything or things, what characteristics did they have?
A. Well, I don't know how to say without getting into maybe, stuff -- I don't want to step on any toes or evidence, but those firms -- you didn't see the disclosure of any asbestos

insulation products in things like answers to interrogatories. In depositions, the plaintiffs could no longer remember names or products, they remember seeing it. If they did, they claimed they saw a little bit of it. It was minimized.

Again, it's not a black and white line. There are firms I would say played it the same and still do today, and there's firms that gave you nothing and there were firms in between.

Q. Okay. Now I understand, Mr. Glaspy, that you identified some examples that illustrate that point.

A. Yes, I did.

MR. KRISKO: Okay. Your Honor, at this point we would need to close the courtroom.

THE COURT: Okay. I'll have to ask anybody that hadn't signed a confidentiality agreement to leave. We'll open back up when we can, which I guess won't be today.

(The courtroom is now closed for the confidential portion of the hearing.)

(The courtroom is now open to the public.)

THE COURT: Now Judge Conrad does need this courtroom tomorrow, so the more you all can get out, the better, I suppose.

MR. KRISKO: Thank you, Your Honor.

THE COURT: I'm not sure what of this is yours and what belongs to the Court, but you need to clear out, and I will find out, I think we may be able to be back in here on the 22nd.

That's what they say so, but we'll let you know. So we'll plan on being back in here, is 9:00 okay?

MR. GUY: Yes, Your Honor.

THE COURT: Okay. Be back in here at 9:00 on August 22nd. And we'll try to wrap it up. Okay.

MR. KRISKO: Thank you, Your Honor.

THE COURT: Thank you all.

(The hearing concluded at 5:23 p.m.)

(End of Proceedings.)

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UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF NORTH CAROLINA
CERTIFICATE OF REPORTER

I, Laura Andersen, Official Court Reporter, certify that the foregoing transcript is a true and correct transcript of the proceedings taken and transcribed by me to the best of my ability.

Dated this the 14th day of August, 2013.

s/Laura Andersen
Laura Andersen, RMR
Official Court Reporter